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BARLEY EXPERIMENTS

OF THE

BATH AND WEST OF ENGLAND SOCIETY

AND

SOUTHERN COUNTIES ASSOCIATION,

1887.

REPORT OF EXPERIMENTAL COMMITTEE
BY MR. KNOLLYS.

CHEMICAL REPORT BY DR. VOELCKER.

THE PRACTICAL OUTCOME BY SIR T. D. ACLAND.

REPRINTED, BY PERMISSION,
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BARLEY EXPERIMENTS

OF

THE BATH AND WEST OF ENGLAND SOCIETY AND SOUTHERN COUNTIES ASSOCIATION.

Barley Experiments. Report of the Experimental Committee.

By J. E. KNOLLYS, Chairman of the Committee.

THE main work of the Experimental Committee in the year 1887 has been the arrangement and conduct of a series of experiments on the effects of certain artificial manures upon the growth, yield, and quality of Barley.

The remarkable results recorded in the account of the Norfolk Experiments of 1886, as arising from the use of potash in connection with nitrogenous manures on Mr. Cooke's Farm at Flitcham, near Lynn, made it evidently desirable to ascertain whether in some of the districts traversed by this Society beneficial results from potash might not be also obtained.

The Norfolk Experiments were also carried out on two other farms, upon soils differing from that at Flitcham, and on these the effects of potash, when used with other manures, was distinctly advantageous, though not to the marvellous extent obtained on Mr. Cooke's land (see Postcript, p. 78).

The Committee, therefore, after consideration of the Report of the Norfolk Experiments, and upon consultation with Dr. Voelcker, determined to make experiment on the barley crop of 1887, with the manures and quantities per acre, as shown in the Table (p. 4).

Two plots K, and N, in each experimental field were arranged to be left without any manure, and the arrangement of the plots in every case was as in the following diagram:—

H.	I.	K.	L.	M.	N.
1¼ cwt. Nitrate of Soda. 2 cwt. Mineral Superphosphate. ¾ cwt. Muriate of Potash.	1 cwt. Sulphate of Ammonia. 2 cwt. Mineral Superphosphate. ¾ cwt. Muriate of Potash.	No Manure.	3 cwt. Peruvian Guano.	1¼ cwt. Nitrate of Soda. 2 cwt. Mineral Superphosphate.	No Manure.

It will be observed that comparisons were thus instituted—

(*a.*) Between the addition of potash in plots H, and I, and its omission in plot M.
(*b.*) A comparison of the relative efficiency of nitrate of soda, and sulphate of ammonia by plots H and I.
(*c.*) A comparison by plot L, of the effect of guano in plot L, with the manures used in H, and I.
(*d.*) A test of the advantage or otherwise of any or all of these treatments of the manured plots by a comparison of the value of their produce with that of the two unmanured plots K and N.

The object of the experiments was stated to be "To ascertain what artificial manures can be most advantageously used for the production of a full crop of barley.

"1. After roots drawn from the land.
"2. After wheat or other corn crop.
"3. On land in any other state requiring manure."

Six plots baving been thus arranged for trial in each experimental field, the Committee sought for offers of suitable land and co-operation from landowners and tenant farmers interested in the subject, and especially from those who had kindly carried out the wheat experiments of the preceding year.

In reply to this invitation the Committee received over thirty offers of land, and experiments were ultimately arranged, and have been kindly carried out by the gentlemen whose names are given in the tabular statement on pp. 6 and 7, in which the situation and soil of the several experimental fields is shortly described.

The *quality* of barley is so material a feature in estimating the value of a barley crop, that it was arranged to have samples of the produce of every plot sent to the Secretary's Office for valuation on the same day, that it might be seen by comparison with the samples from the unmanured plots whether the use of these manures affected the sample injuriously or otherwise.

This work of valuation, no slight one, there being over 180 samples, was kindly undertaken, and very carefully carried out on the 9th of November, by Mr. J. D. Taylor, of Twerton, near Bath, and Mr. W. J. Brown of Box, near Bath, to whom the best thanks of the Committee are due for their valuable services.*

For the calculation of gain or loss by the use of manure, the prices of the head corn were fixed on the 9th of November, in the manner before explained; the tail corn has been calculated at an uniform value of 19*s.* per quarter, and the straw at 30*s.* per ton.†

The cold and dry spring checked the growth of barleys generally, but, as will be seen from notes appended to the return of each experiment, rains in every instance fell soon after the application of the manures, while a general rainfall at the end of May and beginning of June had a most beneficial effect upon the barley's growth. These rains appear to have been quite sufficient to render the manures effective, and the reports of the appearance of the crops, on the barley coming into ear, bore distinct testimony to the more advanced state and superiority of the plots which had received the manures. But the long drought which set in after the beginning of June, and with little exception continued throughout the summer, caused premature and uneven ripening, especially on thin soils, and in the majority of cases materially reduced the yield per acre.

The peculiarities of this season (1887) have therefore rendered the results of these experiments less conclusive than if conducted in a season of ordinary character, but it must not, on that account, be assumed that the effect of the season has been entirely unfavourable to the manured plots; on the contrary, there are indications in several instances that the start which the manured plots obtained was of especial service this season in

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* Owing to the samples being taken before the barley had its "sweat," and the difficulty of cleaning up small quantities, it is probable that the bulk has in many cases made a higher price than that put on the sample on the 9th November, and if so, the gain by the use of manures will have been a little more than that stated. —J. E. K.

† For convenience of calculation, odd pounds' weight of the tail corn have been taken at ½*d.* per lb.

STATEMENT giving NAMES of PERSONS by whom the BARLEY EXPERIMENTS, 1887, have been carried out, with DESCRIPTION and SITUATION of the EXPERIMENTAL PLOTS.

Owners, Agents, or Occupiers.	Situation.	Soil.	Subsoil or Geological Formation.
WESTERN AND SOUTH-WESTERN COUNTIES.			
Sir T. D. Acland Mr. W. H. Tremaine	*Cornwall.* Trerice, St. Colomb	Light and dry	Devonian
Mr. Magor	Benallock, Grampound Road	Light	Clay slate
Sir T. D. Acland Mr. Stevens	*Devon.* Broad Clyst, near Exeter	Deep loam	New Red Sandstone
Hon. Mark Rolle	Bicton, near Budleigh Salterton	Sandy loam	New Red Sandstone
Sir T. D. Acland Mr. John Clarke	*Somerset.* Luccombe, West	Light, stone rush	New Red Sandstone
Mr. Knollys	Fitzhead, Milverton	Dry and shallow	Dolomitic conglomerate
Mr. Sellick	Brompton Ralph, Wiveliscombe.	Blue Rag (Shillet)	Slate
Mr. A. C. Skinner	Bishop's Lydeard, Vale of Taunton	Freeworking	Red Sandstone
Mr. Gibbons	Tunley, Bath	Lias, fairly dry	Clay and stone
Mr. John Bennett	*Hereford.* Near Ross	Sandy loam, dry	Red Sandstone
Mr. Bonnor	Near Ross	Free working	Red Sandstone
Mr. Hill	*Shropshire.* Near Church Stretton	Medium dry, gravelly	Wenlock shale
Mr. Till	*Gloucester.* Thornbury	Deep loam	Gravel

SOUTHERN AND SOUTH-EASTERN COUNTIES.

Major Sparks	*Dorset.* Near Weymouth	Limestone	Clay
Mr. Besent	Kingston, near Blandford	Medium	Chalk
Mr. Storey-Maskelyne, M.P.	*Wilts.* Basset Down, Swindon	Marly loam	Chalk marl
Mr. Richards	Charlton, near Shaftesbury	Sandy	Green Sandstone
Messrs. C. and T. Coles	Edge of Salisbury Plain	Gravel	Chalk
Mr. Mark Wallis	Salisbury Plain, South	Flinty	Chalk
Mr. Tom Gray	Salisbury Plain, North	Light chalk	Chalk
Mr. Iremonger Mr. Studdy	*Hants.* Near Stockbridge	Gravel.	Chalk
Mr. Hewett	Near Stockbridge	Light chalk	Chalk
Mr. Benyon Mr. Todd	*Berks* Englefield, near Reading	Sandy loam	Gravel
Lord Wantage Mr. Eady	Ardington, near Wantage	Good loam	Chalky rock and Greensand
Mr. Martin J. Sutton	*Oxford.* Near Reading	Gravel	Chalk
Mr. G. Herbert Morrell Major Drage	Headington Hill, Oxford	Loam	Calcareous grit, and Oxford clay
Mr. Stewart Hodgson Mr. Purkis	*Surrey.* Haslemere	Gravel	Clay and gravel
Viscount Hampden Mr. Colgate	*Sussex.* Glynde, near Lewes	Medium	Chalk
Mr. Ashcroft	*Kent.* Hayes, near Beckenham	Medium with flint	Drift clay on chalk

giving them their ultimate advantage over those which were without manure.

The results obtained from each experimental field are shown on separate tables.

These tables are arranged in three groups.

GROUP I.—Barley grown after
ROOTS DRAWN FROM THE LAND (pp. 14–23).

GROUP II.—Barley grown after
WHEAT OR OTHER CORN CROPS (pp. 24–67).

GROUP III.—Barley grown
ON LAND IN ANY OTHER STATE (pp. 68–77).

GROUP I.

AFTER ROOTS DRAWN FROM THE LAND.

(Tables 8C, 13, 20, 20D, 25.)

If we collect the gains and losses in this class of the experiments, as shown by the five tables pp. 14–23 (omitting plots H and M in No. 8C as exceptionally damaged by rain in harvest), we arrive at the following pecuniary results arising from the use of the manures.

	H.			I.			L.			M.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Gains	2	13	6	2	2	6	3	2	10	1	1	9
Losses	0	15	4	0	10	1	0	18	7	0	6	11
Net gains	£1	18	2	1	12	5	2	4	3	0	14	10
Average gain per acre ..	0	9	6½	0	6	5¾	0	8	10	0	3	8½

GROUP II.

AFTER WHEAT OR OTHER CORN CROP.

(Tables 1, 2, 3, 6, 7, 8A, 8B, 9, 10, 11, 14, 15, 16, 17, 18, 18D, 19, 21, 22, 24B, 26, 28.)

The experiments under this head are the most important of the series, as the growth of barley after a previous wheat crop is in many districts the ordinary practice.

With the exception of the plots in No. 26 (where the deficiency is accounted for by wire-worm) and a very trifling difference in L and M, in No. 19, the manures on all the other plots in this group (82 in number) gave an increased *produce* over the average of the two unmanured plots, but in many instances not a sufficient increase to pay for the manure.

Excluding No. 26, where, from Mr. Mark Wallis's statement, some of the crops were so injured by wire-worm as to give no reliable comparison of the effects of the manures, a collected account in money value of the gains and losses on the other twenty-one tables gives the following results:

	H.			I.			L.			M.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Gains	11	3	3	12	13	9	5	18	4	14	1	4
Losses	2	11	5	1	19	10	3	17	4	4	6	3
Net gains on the 21 Plots	£8	11	10	10	13	11	2	1	0	9	15	1
Average gain per acre ..	0	8	2	0	10	2	0	1	11½	0	9	3½

GROUP III.

LAND IN ANY OTHER STATE REQUIRING MANURE.

(Tables 4, 5, 23, 27, 29.)

The following figures give a collected account of the pecuniary gains and losses in this series of the experiments, in which it is to be observed that the losses materially exceed the gains:—

	H.			I.			L.			M.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Losses	5	9	1	3	17	8	3	4	7	3	5	3
Gains	0	17	9	0	0	2	0	7	5	1	9	7
Net Losses	£4	11	4	3	17	6	2	17	2	1	15	8
Average loss per acre ..	0	18	3	0	15	6	0	11	5	0	7	1½

The loss in the three cases 4, 5, and 27, where roots had been fed off, contrasts strongly with the gain in the three cases 13, 20, and 20D, where roots had been drawn from the land. The question arises, did these lands require any, and if so, what manure for a barley crop? We should have had some answer to this in No. 27, if a plot on which corn and cake had been consumed could have been compared with the experimental plots. This was intended, but unfortunately not carried out.

If we now look to the results obtained under these three groups of experiments as to the advantage derived from the use of potash, we find in the first group, five in number, where "roots had been drawn from the land," that the plots H and I, which had the addition of 84 lbs. (¾ cwt.) of potash, and plot L, which had potash as one of the constituents of guano, gave larger profits per acre than the plots (M) in which the potash was omitted. But in the twenty-one tables of the second group of the experiments, Barley after Wheat, the potash plots have no advantage, the average gain per acre of H and I being 9*s.* 2*d.*, and the gain on the plots M, similarly manured, but without potash, 9*s.* 3½*d.*

And in the five experiments of the third group, where losses are shown from each class of manure, the losses are very much the heaviest on the potash plots.

The following table will perhaps show this more clearly:—

GAINS PER ACRE.

	H.	I.	L.	M.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Group I.	9 6½	6 5¾	8 10	3 8½
Group II.	8 2	10 2	1 11½	9 3½

LOSSES PER ACRE.

Group III.	18 3	15 6	11 5	7 1½

It will, however, occur to many minds that the large increases obtained from potash in Norfolk were upon chalk soils. Let us see, therefore, what has been the result of these experiments where they have been either upon chalk soil or subsoil (see table on page 11).

Contrasted with the almost magical effects of potash upon chalk soils in Norfolk, its failure on our own chalk soils is very disappointing, for it will be observed that the aggregate losses of the three potash plots exceed the aggregate gains, and that plot M alone, where potash was omitted, gives a satisfactory return.

Samples of these chalk soils have been sent to Dr. Voelcker for analysis, and will be referred to by him in a short report

RETURNS from CHALK SOILS or SUBSOILS.

GAINS BY USE OF MANURES.

		H.	I.	L.	M.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
3	E. Besent	0 1 7	0 2 1	0 5 9	..
6	C. and T. Coles ..	..	0 3 2	..	0 3 2
7	Viscount Hampden ..	..	..	0 6 10	1 1 11
10	T. Gray	0 9 4	..	0 8 11	1 9 8
11	R. Hewett	..	0 3 11	..	..
21	W. H. Iremonger ..	0 10 9	0 6 3	0 3 3	0 1 4
22	M. J. Sutton	0 12 3	0 5 1	..	0 2 10
		1 13 11	1 0 6	1 4 9	2 18 11

LOSSES BY USE OF MANURES.

		H.	I.	L.	M.
1	W. Ashcroft	0 18 8	1 0 2	0 8 1	0 2 1
3	E. Besent	..	..	..	0 3 6
6	C. and T. Coles ..	0 5 9	..	0 18 9	..
7	Viscount Hampden ..	0 0 5	0 18 5	..	..
10	T. Gray	..	0 0 3	..	..
11	R. Hewett	0 9 1	..	0 10 11	0 12 5
22	M. J. Sutton	..	..	0 0 7	..
		1 13 11	1 18 10	1 18 4	0 18 0

which he will kindly make on the experiments. It will be extremely interesting to learn whether this difference in the effect of potash is to be ascribed to the soil, or whether we are to look for it in any other cause. The forthcoming account of the Norfolk Experiments of 1887 will therefore be of special value and interest, in showing whether or not this exceptionally dry season has checked the effect of potash there, as if that should be the case we may probably ascribe to the season some portion of its failure here.

Turning now to the questions proposed to be solved by these experiments as stated on page 4, the replies which the experiments afford will probably be more accurate if confined to the results of the twenty-one cases in the second group, as the advantages gained by the use of manures in the five cases of the first group, are counter-balanced by the losses in the five cases of the third group.

These answers may be thus shortly given :—

PLOTS H.

2	cwt.	Mineral Superphosphate	gave an average profit of 8*s.* 2*d.* per acre.
1¼	„	Nitrate of Soda	
¾	„	Muriate of Potash	

PLOTS I.

2	cwt.	Mineral Superphosphate	gave an average profit of 10*s.* 2*d.* per acre.
1	„	Sulphate of Ammonia	
¾	„	Muriate of Potash	

PLOTS L.

3	cwt.	Peruvian Guano	gave an average profit of 1*s.* 11½*d.* per acre.

PLOTS M.

2	cwt.	Mineral Superphosphate	gave an average profit of 9*s.* 3½*d.* per acre.
1¼	„	Nitrate of Soda	

In arriving at the results of profit or loss in these experiments the quality of the various samples of barley has of course had a material influence, and it will be instructive to note what has been the general effect of the use of these several manures on the various samples.

Without wearying the readers of this report with a number of figures, the following statement will show the average prices of the barleys grown under the several conditions before named, viz :—

Thirty-two	Plots	H	.	27*s.* 8*d.* per quarter.
Thirty-two	„	I	.	28*s.* 4*d.* „
Thirty-one	„	K	.	28*s.* 3½*d.* „
Thirty-one	„	L	.	28*s.* 6*d.* „
Thirty-two	„	M	.	27*s.* 8¾*d.* „
Thirty-two	„	N	.	28*s.* 3½*d.* „

Although the exceptional character of the 1887 season necessarily makes the results obtained from these barley experiments more open to question than would have been the case under ordinary conditions, their number and the wide area over which they have extended gives them weight and importance, and to those gentlemen who have so kindly and so carefully carried them out, I desire to tender the warm thanks of the Experimental Committee.

On behalf of the Committee,

J. E. KNOLLYS, *Chairman.*

TABULAR RESULTS
OF
BARLEY EXPERIMENTS.

GROUP I.

No. 8c.—AFTER MANGOLDS.—Mr. G. H. MORRELL'S EXPERIMENTS, Oxon., Headington Hill.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s d.	£ s. d.	£ s. d.	£ s. d.	£ s d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	46 0	56	3 9	11 0 11	0 19 3	..	..	7 7
	Mineral Superphos. ..	2		Tail Corn	1 14	.	..					
	Muriate of Potash ..	¾		Straw ..	3400	.	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	46 0	56½	4 1½	12 2 2	2 0 6	..	0 15 11	..
	Mineral Superphos. ..	2		Tail Corn	1 28	..	..					
	Muriate of Potash	¾		Straw .	3656	..	..					
K	No Manure	..	..	Head Corn	41 17½	56½	4 3	10 17 6	..	..	..	..
				Tail Corn	1 30	..	..					
				Straw ..	2872	..	.					
L	Peruvian Guano ..	3	1 5 10	Head Corn	44 36	56¾	4 3	11 18 11	1 17 3	..	0 11 5	..
				Tail Corn	1 24	..	..					
				Straw ..	3436	..	.					
M	Nitrate of Soda .. .	1¼	1 0 3	Head Corn	44 26	56¼	3 10½	11 2 1	1 0 5	..	0 0 2	..
	Mineral Superphos. ..	2		Tail Corn	1 2	..						
				Straw ..	3540	..						
N	No Manure	..	..	Head Corn	37 2	56	4 0	9 5 11	..	..	..	..
				Tail Corn	1 22	..	..					
				Straw ..	2584	..	..					

Average of Plots K and N :—10*l.* 1*s.* 8*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 8c,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Scotch. 2 bushels. Sown March 9th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 9th, and harrowed in with seed. Sulphate Ammonia and Nitrate Soda, April 19th, rolled in.

First Rains after application of Manures.—March 15th, a fall of snow. April 23rd, cold showers.

Previous Cultivation.—1882, Wheat. 1883, Vetches, Beans. 1884, Roots. 1885, Oats. 1886, Mangold.

Soil.—Strong heavy loam on Oxford Blue Clay, near, but above, the junction of Calcareous Grit and Oxford Clay.

Major Drage says that there were some slight showers while this corn was standing in shock; these seem to have affected the samples of Plots H and M principally, which were consequently placed by the Judges at a lower price.

GROUP I.

No. 13.—AFTER TURNIPS DRAWN OFF.—HON. MARK ROLLE'S EXPERIMENTS, East Devon, Bicton.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw .	34 0 4 4 2330	55¼	3 4½ .. .	7 15 7	1 15 7	.	0 8 9	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw .	34 27½ 3 20 2132	55	3 9 .. .	8 5 10	2 5 10		1 1 3	.
K	No Manure	..	..	Head Corn Tail Corn Straw ..	Not sown.	.. ..	..	..	..	..	..	.
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw	34 6 4 25 2124	55 .. .	3 7½	8 2 6	2 2 6	..	0 16 8	..
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	32 20 5 10 2334	55 .. .	3 4½	7 12 9	1 12 9	..	0 12 6	..
N	No Manure .. .	..	..	Head Corn Tail Corn Straw ..	24 10 5 0 1528	54½	3 7½	6 0 0	..	..	..	..

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 13,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—13 pecks. Sown on March 28th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 29th. Sulphate Ammonia and Nitrate Soda, April 19th.

First Rains after application of Manures.—March 31st, and April 22nd, 23rd, 24th.

Previous Cultivation.—1883, Barley. 1884, Mangold (dung and dissolved bone). 1885, Barley. 1886, Trifolium, followed by Turnips (a small quantity of dung), all drawn off.

Soil.—Sandy loam, on New Red Sandstone.

Mr. Lipscomb says that in this Experiment Plot K was omitted for want of space. The comparison therefore rests upon the produce of one unmanured Plot N, instead of the average of K and N, as in other cases.

GROUP I.

No. 20.—AFTER SWEDES DRAWN OFF.—Sir T. D. ACLAND'S EXPERIMENTS, Devonshire, near Exeter.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s d.	£ s. d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	43 24	58	3 4½	9 9 7	2 3 7	..	0 16 9	..
	Mineral Superphos. .	2		Tail Corn	3 15	..	..					
	Muriate of Potash ..	¾		Straw ..	2642	..	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	40 0	58	3 4½	8 12 5	1 6 5	..	0 1 10	..
	Mineral Superphos. .	2		Tail Corn	2 38	..	..					
	Muriate of Potash ..	¾		Straw ..	2324	..	..					
K	No Manure	..	..	Head Corn	34 30	58	3 4½	7 7 5	..	..	..	..
				Tail Corn	2 28	..	..					
				Straw ..	1866	..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	42 0	57	3 6	9 8 0	2 2 0	..	0 16 2	..
				Tail Corn	3 47	..	..					
				Straw ..	2388	..	..					
M	Nitrate of Soda ..	1¼	1 0 3	Head Corn	38 36	57	3 4½	8 7 3	1 1 3	..	0 1 0	..
	Mineral Superphos. .	2		Tail Corn	3 15	..						
				Straw ..	2180	..	..					
N	No Manure	..	..	Head Corn	32 4	57¼	3 7½	7 4 8	..	..	..	..
				Tail Corn	2 22	..	..					
				Straw ..	1698	..	..					

Average of Plots K and N:—7*l.* 6*s.* 0*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 20,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Beardless. 2½ bushels. Sown March 12th.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 12th, drilled with the corn. Sulphate Ammonia and Nitrate Soda, 18th April, worked in.

First Rain after application of Manures.—A snowstorm on March 15th. Rain on March 22nd.

Previous Cultivation.—1882, Swedes (dissolved bones and Superphosphate). 1883, Barley. 1884, Clover (10 loads of dung). 1885, Wheat (part Nitrate Soda, part Guano, part Superphosphate—a good crop). 1886, Swedes, carted off (8 loads of dung, 2 cwt. dissolved bones, 3 cwt. Superphosphate).

Soil.—Medium, and dry. Deep loam, on New Red Sandstone.

Mr. Stevens says that the land of these six plots is of rather better quality than that of the duplicate plots in the same field, No. 20D. He considers that three or four bushels per acre of corn fell out in harvesting.

GROUP I.

No. 20D.—AFTER SWEDES DRAWN OFF.—Sir T. D. ACLAND'S EXPERIMENTS, Devonshire, near Exeter.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s d.	£ s. d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	42 12 3 27 2514	56½	3 6 .. .	9 9 7	2 14 10	..	1 8 0	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	35 24 3 5 2032	58	3 7½ ..	8 2 10	1 8 1	..	0 3 6	..
K	No Manure	..	..	Head Corn Tail Corn Straw ..	28 32 2 44 1574	58¼	3 9	6 14 9	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	36 14 4 32 2424	57¼	3 9	8 19 2	2 4 5	..	0 18 7	..
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	35 47 4 0 2456	56½	3 4½	8 3 3	1 8 6	..	0 8 3	..
N	No Manure	..	..	Head Corn Tail Corn Straw ..	21 41 2 18 1502	57¼	3 6¾	5 3 0	..	..	..	..

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 20D,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Beardless. 2½ bushels. Sown March 12th.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, 12th March, drilled with the Corn. Sulphate Ammonia and Nitrate Soda, April 18th, worked in.

First Rain after Application of Manures.—A snow storm on March 15th. Rain on March 22nd.

Previous Cultivation.—1882, Swedes (dissolved bones and Superphosphate). 1883, Barley. 1884, Clover (10 loads of dung). 1885, Wheat (part Nitrate Soda, part Guano, part Superphosphate, a good crop). 1886, Swedes, carted off (8 loads of dung, 2 cwt. dissolved bones, 3 cwt. Superphosphate).

Soil.—Medium and dry; deep loam on New Red Sandstone.

Mr. Stevens states that Plot N was seriously damaged by rooks just before harvest, the comparison is therefore based on the produce of Plot K only. Plot M was also slightly damaged by rooks.

GROUP 1.

No. 25.—AFTER MANGOLDS.—Sir T. D. ACLAND'S EXPERIMENTS, West Cornwall, near St. Columb.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s d.	£ s. d.	£ s. d.
II	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn	37 34	53	2 4½	6 2 5	0 11 6	..	..	0 15 4
				Tail Corn	3 46		..					
				Straw ..	1796	..	..					
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn	39 14	53½	2 4½	6 5 5	0 14 6	..	..	0 10 1
				Tail Corn	2 46	..	..					
				Straw ..	1910	..	..					
K	No Manure	..	..	Head Corn	34 38	54	2 4½	5 10 0	..	..	..	..
				Tail Corn	2 30	..	..					
				Straw ..	1608	..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	36 38	53½	2 4½	5 18 2	0 7 3	..	..	0 18 7
				Tail Corn	2 38	..	..					
				Straw ..	1844	..	..					
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn	38 28	53½	2 4½	6 4 3	0 13 4	..	..	0 6 11
				Tail Corn	3 0	..	..					
				Straw ..	1916		..					
N	No Manure	..	..	Head Corn	35 14	53	2 4½	5 11 10	..	..	..	..
				Tail Corn	2 26	..	..					
				Straw ..	1662	..	..					

Average of Plots K and N :—5*l.* 10*s.* 11*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 25,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—2½ bushels. Sown April 6th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano. April 9th, harrowed in. Sulphate Ammonia and Nitrate Soda, April 28th.

First Rain after Application of Manures.—April 26th. May 6th.

Previous Cultivation.—1881 to 1884, Ley. 1885, Oats. 1886, Mangold (13 loads of dung and 6 cwt. of dissolved bones and Superphosphate).

Soil.—Light and dry. Stone Rush. Devonian.

Mr. Tremaine remarks that there was little apparent effect from the Manures after the first month. May not the heavy dressing in the preceding year for Mangold partly account for this?

GROUP II.

No. 1.—AFTER WHEAT.—Mr. W. ASHCROFT'S EXPERIMENTS, Kent, near Beckenham.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s d.	£ s. d.	£ s. d.	£ s. d.	£ s d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	34 20 0 49 2640	54¾	2 10½ . ..	6 16 2	0 8 2	..	..	0 18 8
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	31 19 0 42 2446	55	3 1½ ..	6 12 5	0 4 5	..	..	1 0 2
K	No Manure	..	..	Head Corn Tail Corn Straw ..	29 28 0 36 2156	54¼	3 1½	6 2 9	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	36 19 1 8 2542	54¾	3 0	7 5 9	0 17 9	..	..	0 8 1
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	36 35 1 22 2628	54¼	2 11¼	7 6 2	0 18 2	..	..	0 2 1
N	No Manure ..	..	..	Head Corn Tail Corn Straw ..	32 50 0 40 2152	54½	3 1½	6 13 3	..	..	..	..

Average of Plots K and N:—*6l.* 8*s.* 0*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 1,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Oakshott's Peerless White, $2\frac{3}{4}$ bushels, sown March 31st, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano harrowed in, in front of Drill, March 31st. Sulphate Ammonia and Nitrate Soda, April 22nd, left on surface but rolled.

First Rains after Application of Manures.—March 31st and April 1st, April 24th and four succeeding days.

Previous Cultivation.—1883, Kale, fed off with cake (land chalked, dunged, and 5 cwt. Superphosphate). 1884, Oats. 1885, Clover mown, then fed with cake. 1886, Wheat (Bath and West of England Society's Experiments).

Soil.—Medium with Flint. Drift clay on chalk.

Mr. Ashcroft reported that the no manure Plots K and N were much behind the others on coming into ear and were also unfit to cut till three days after the other Plots.

GROUP II.

No. 2.—AFTER WHEAT.—Mr. JOHN BENNETT'S EXPERIMENTS, Herefordshire, near Ross.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Lead Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s d.
H	Nitrate of Soda Mineral Superphos. Muriate of Potash	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw	25 30 3 0 1552	58	4 2¼	6 14 9	1 14 6	..	0 7 8	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw	22 4 3 4 1291	60	4 6	6 3 10	1 3 7	..	..	0 1 0
K	No Manure	..	..	Head Corn Tail Corn Straw	20 14 2 24 947	60	4 3	5 4 3		..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	24 1 3 0 1478	60	4 4½	6 11 11	1 11 8	.	0 5 10	..
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	22 11 3 6 1390	60	4 3	6 0 2	0 19 11	..	..	0 0 4
N	No Manure ..		..	Head Corn Tail Corn Straw ..	19 23 2 20 989	60	4 0 ..	4 16 3	..	..	..	..

Average of Plots K and N:—5*l.* 0*s.* 3*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 2,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Hallett's Golden Melon, $2\frac{1}{4}$ bushels, sown April 2nd, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, worked in with seed April 2nd. Sulphate Ammonia, and Nitrate Soda, sown April 22nd, rolled in April 23rd.

First Rains after Application of Manures.—April 25th, and showers for some succeeding days.

Previous Cultivation.—1882, Barley after Roots. 1883, Peas (clover failed). 1884, Wheat (dunged). 1885, Mustard on Fallow after Vetches, fed off with sheep (no manure). 1886, Wheat (Bath and West of England Experiments).

Soil.—Sandy loam, dry. Red Sandstone or Dunstone.

Mr. Bennett's report on the Barley coming into ear shows that all the manures were telling. Plot L appearing the strongest, and H the next.

GROUP II.

No. 3.—AFTER WHEAT.—Mr. EDWARD BESENT'S EXPERIMENTS, Dorsetshiré, near Blandford.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s d.	£ s. d.	£ s. d.	£ s. d.	£ s d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	52 42	55½	3 4½	10 15 5	1 8 5	..	0 1 7	..
	Mineral Superphos. ..	2		Tail Corn	1 25	..	..					
	Muriate of Potash	¾		Straw ..	2535	..	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	44 28	56	4 0	10 13 8	1 6 8	.	0 2 1	..
	Mineral Superphos. ..	2		Tail Corn	1 26	.	..					
	Muriate of Potash ..	¾		Straw ..	2400	..	..					
K	No Manure	..	..	Head Corn	44 27	55	3 1½	8 16 8	..		..	..
				Tail Corn	1 12	.	..					
				Straw ..	2595	..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	47 14	56	3 9	10 18 7	1 11 7		0 5 9	..
				Tail Corn	2 17		..					
				Straw ..	2685		..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	45 28	55½	3 7½	10 3 9	0 16 9	..	..	0 3 6
	Mineral Superphos. ..	2		Tail Corn	1 42	..	..					
				Straw ..	2595	..	..					
N	No Manure	..	..	Head Corn	42 14	55	4 0	9 17 4	..	..	..	..
				Tail Corn	1 34		..					
				Straw ..	1830	..	..					

Average of Plots K and N :—9*l.* 7*s.* 0*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 3,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Webb's Kinver Chevalier, 2 bushels, sown March 25th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 26th, lightly harrowed in. Sulphate Ammonia and Nitrate Soda, April 25th, washed in by rain directly.

First Rains after Application of Manures.—April 25th and May 2nd. Rain also fell on May 20th, June 2nd, July 17th, and 26th.

Previous Cultivation.—1881, Barley. 1882, Swedes (6 bushel bones, 3 cwt. Superphosphate). 1883, Oats. 1884, Clover, mown for Hay, the after-crop fed off by lambs, eating cake. 1885, 2nd year's Clover, fed off by sheep in Spring and Summer with Mangold, &c., well dressed with farmyard dung; then ploughed and pressed early; then folded by 600 ewes in large folds before being sown with wheat. 1886, Wheat (11 sacks per acre).

Soil.—Medium, with slight mixture of chalk on chalk subsoil.

Mr. Edward Besent reported that on coming into ear, Plot L looked best, I second, M third, H fourth, K fifth, N sixth.

GROUP II.

No. 6.—AFTER WHEAT.—Messrs. C. and T. COLES' EXPERIMENTS, Wiltshire, Edge of Salisbury Plain.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s d.	£ s. d.	£ s d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	30 0	56	3 0	6 13 3	1 1 1	.	..	0 5 9
	Mineral Superphos. ..	2		Tail Corn	2 32	..	..					
	Muriate of Potash ..	¾		Straw .	2779	..	.					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	31 50	57	3 1½	6 19 11	1 7 9	..	0 3 2	..
	Mineral Superphos. ..	2		Tail Corn	1 34	..	..					
	Muriate of Potash ..	¾		Straw	2725		..					
K	No Manure . ..		..	Head Corn	23 33	57½	3 3	5 0 10	..	..	..	..
				Tail Corn	0 40		..					
				Straw ..	1663	..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	28 18	57	3 1½	5 19 3	0 7 1	..	..	0 18 9
				Tail Corn	0 47		..					
				Straw	2153		..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	31 28	56	3 1½	6 15 7	1 3 5	..	0 3 2	
	Mineral Superphos. ..	2		Tail Corn	1 7	..	..					
				Straw ..	2579		..					
N	No Manure	..	..	Head Corn	27 41	57½	3 4½	6 3 6		..	..	..
				Tail Corn	0 40	..	..					
				Straw ..	2117		..					

Average of Plots K and N:—*5l.* 12*s.* 2*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 6,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Archer's Stiff Straw, $3\frac{1}{4}$ bushels, sown April 5th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 10th, harrowed in. Sulphate Ammonia and Nitrate Soda, April 25th, rolled (Barley about one inch high).

First Rains after Application of Manures.—June 1st.

Previous Cultivation.—1882, Wheat. 1883, Barley. 1884, Turnips and Rape (3 cwt. Superphosphate), fed off by sheep with corn and cake. 1885, part Potatoes (20 loads of dung), part Rape (10 loads dung, 2 cwt. Superphosphate), Rape fed off with corn and cake. 1886, Wheat.

Soil.—Gravel, on chalk.

GROUP II.

No. 7.—AFTER WHEAT.—Viscount HAMPDEN'S EXPERIMENTS, Sussex, near Lewes.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts	£ s. d.		bus. lbs.	lbs.	s. d.	£ s d.	£ s d.	£ s d.	£ s. d.	£ s d.
H	Nitrate of Soda . Mineral Superphos Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	45 29 43½ Most	58	4 6 ..	10 6 6	1 6 5	..	..	0 0 5
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	41 0 43½ 3rd quantity	58	4 6	9 6 3	0 6 2	..	..	0 18 5
K	No Manure	..		Head Corn Tail Corn Straw ..	38 14½ 1 0 4th quantity	58	4 6	8 14 6		..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	46 43½ 1 0¾ 2nd quantity	58	4 6	10 12 9	1 12 8	..	0 6 10	..
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	49 0 43½ Most	58	4 6	11 2 3	2 2 2	..	1 1 11	..
N	No Manure	..	..	Head Corn Tail Corn Straw ..	41 0 29 4th quantity	58	4 6	9 5 8	..	..	..	..

Average of Plots K and N:—9*l*. 0*s*. 1*d*.

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 7.

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Chevalier, 4 bushels, sown March 31st, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 31st. Sulphate Ammonia and Nitrate Soda, May 4th.

First Rains after Application of Manures.—March 31st and April 1st; May 16th, with showers for several days.

Previous Cultivation.—1883, Swedes (30 loads dung), fed off, but not close folded. 1885, Peas, sheep folded after Peas off. 1886, Wheat.

Soil.—Medium. Chalk.

Mr. Colgate says the season has been the driest he ever remembers; that the yield of Barley over the whole farm is much under the average, which for 20 years previous has been 6 quarters an acre. In this case the straw was not weighed, and consequently not included in the value of the crop. Mr. Colgate states that the heaviest Plots were those which received Nitrate, Guano coming next, and then Sulphate of Ammonia.

GROUP II.

No. 8A.—AFTER BARLEY.—Mr. G. H. MORRELL'S EXPERIMENTS, Oxon., Headington Hill.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s d.	£ s. d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw	34 0 1 16 2522	57 ..	3 3	7 7 3	1 12 11	..	0 6 1	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	38 0 0 32 2362	56	3 3	7 16 5	2 2 1	..	0 17 6	..
K	No Manure	..		Head Corn Tail Corn Straw ..	31 0 0 32 1770	56	3 3	6 5 9	..	..	..	
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	36 0 0 38 1648	56	3 6	7 9 8	1 15 4		0 9 6	..
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	40 0 1 4 2152	56¼	3 1½	7 16 4	2 2 0	..	1 1 9	..
N	No Manure	..	..	Head Corn Tail Corn Straw ..	25 12 0 28 1358	56	3 3¾	5 2 11	..	..	..	..

Average of Plots K and N :—5*l.* 14*s.* 4*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 8A,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Scotch. 2 bushels. Sown April 30th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 30th, harrowed with seed. Sulphate Ammonia and Nitrate Soda, May 12th, rolled in.

First Rains after Application of Manures.—May 4th and 19th.

Previous Cultivation.—1882, Swedes. 1883, Oats. 1884, Barley. 1885, Vetches and Swedes. 1886, Barley.

Soil.—Sandy loam. Junction of Calcareous Grit and Oxford Clay.

Major Drage remarks on the coldness of the nights, as well as the long drought of this season; and adds that these Plots, having been sown late, were injuriously affected by both these circumstances.

GROUP II.

No. 8B.—AFTER WHEAT.—MR. G. H. MORRELL'S EXPERIMENTS, OXON., HEADINGTON HILL.

RESULTS, CALCULATED PER ACRE.

PLOTS.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s d.	£ s d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	37 36	56	3 6	8 7 2	1 4 6	..	..	0 2 4
	Mineral Superphos. ..	2		Tail Corn	1 32	..	..					
	Muriate of Potash ..	¾		Straw ..	2370	..						
I	Sulphate of Ammonia	1	1 4 7	Head Corn	40 0	56	3 6	8 17 8	1 15 0	..	0 10 5	..
	Mineral Superphos. ..	2		Tail Corn	1 28	..	..					
	Muriate of Potash ..	¾		Straw	2552	..	..					
K	No Manure	..		Head Corn	27 8½	55½	3 11¼	6 17 0	..	..	..	..
				Tail Corn	2 14	..						
				Straw ..	1854	..						
L	Peruvian Guano ..	3	1 5 10	Head Corn	37 35½	56½	4 3	9 14 4	2 11 8	..	1 5 10	..
				Tail Corn	42	..	..					
				Straw ..	2452	..	..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	40 36	56¼	4 0	10 3 2	3 0 6	..	2 0 3	..
	Mineral Superphos. ..	2		Tail Corn	1 32	..	..					
				Straw ..	2764	..	..					
N	No Manure	..	..	Head Corn	28 44	56	4 1½	7 8 5	..	..	..	..
				Tail Corn	1 30	..	..					
				Straw ..	1956	..	..					

Average of Plots K and N :—7*l*. 2*s*. 8*d*.

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 8B,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Scotch, 2 bushels, sown April 13th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 13th, 1887, broadcast just before drilling, and harrowed in with the seed. Sulphate Ammonia and Nitrate Soda, May 9th, rolled in.

First Rains after Application of Manures.—23rd April, 1887, cold showers, and May 11th, 1887.

Previous Cultivation.—1882, Wheat. 1883, Swedes. 1884, Barley. 1885, Mangold. 1886, Wheat.

Soil.—Clay loam, on subsoil of mild clay. Junction of Calcareous Grit and Oxford Clay.

GROUP II.

No. 9.—AFTER WHEAT.—Mr. GEORGE GIBBONS' EXPERIMENTS, East Somerset, near Bath.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s d.	£ s d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	46 28	59	4 3	12 10 0	2 13 4	..	1 6 6	
	Mineral Superphos. ..	2		Tail Corn	3 15	..						
	Muriate of Potash ..	¾		Straw ..	3360	..						
I	Sulphate of Ammonia	1	1 4 7	Head Corn	47 25½	59½	4 7½	13 15 0	3 18 4	..	2 13 9	..
	Mineral Superphos. ..	2		Tail Corn	3 30½	..						
	Muriate of Potash	¾		Straw ..	3528	..						
K	No Manure			Head Corn	35 0	59¾	4 10½	10 6 9		..	..	..
				Tail Corn	2 17	..						
				Straw ..	2296	..	..					
L	Peruvian Guano	3	1 5 10	Head Corn	43 28	59¾	4 0¾	11 10 4	1 13 8	..	0 7 10	
				Tail Corn	3 42½	..						
				Straw ..	3360	..						
M	Nitrate of Soda	1¼	1 0 3	Head Corn	35 11	59	4 2¼	9 11 10		0 4 10	..	1 5 1
	Mineral Superphos. ..	2		Tail Corn	3 46	..						
				Straw ..	2660	..						
N	No Manure	..		Head Corn	33 3	59½	4 7½	9 6 8	..	..	..	..
				Tail Corn	2 1	..						
				Straw ..	2172	..						

Average of Plots K and N:—9*l.* 16*s.* 8*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 9,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Chevalier, 2 bushels, sown February 19th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and half Guano, April 25th, left on the surface. Half Guano, Sulphate Ammonia, and Nitrate Soda, May 30th, left on the surface.

First Rains after Application of Manures.—5 days after the April sowing, 3 days after the May sowing.

Previous Cultivation.—1881, Spring Wheat. 1882, Swedes, fed off by grazing sheep after half carted off. 1883, Mangold and Cabbage, well manured with farmyard dung. 1884, part Rye, harvested, and part Wheat. 1885, Vetches, followed by Swedes, poor crop. 1886, Wheat.

Soil.—Lias, fairly dry, on clay and stone.

Mr. Gibbons says that the Barley was drilled upon the "frost furrow" (only one ploughing in December after Wheat); the land was fine and dry as sand; that it came up strongly and tillered out well; and that he did not apply the Manures until a general growth was taking place; that, though the swathes were not turned, he thinks at least 2 bushels per acre must have been shed.

GROUP II.

No. 10.—AFTER WHEAT.—Mr. TOM GRAY'S EXPERIMENTS, Wilts, Salisbury Plain North.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda ..	1¼	1 6 10	Head Corn	42 38	54½	3 0	7 19 10	1 16 2		0 9 4	..
	Mineral Superphos. ..	2		Tail Corn	2 22	..	..					
	Muriate of Potash ..	¾		Straw ..	1948		..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	36 34	55	3 3	7 8 0	1 4 4	..	..	0 0 3
	Mineral Superphos. .	2		Tail Corn	3 10	..	..					
	Muriate of Potash ..	¾		Straw ..	1602	..	..					
K	No Manure	..		Head Corn	32 12	54¾	3 1½	6 2 7	..	..	..	
				Tail Corn	2 32	..	..					
				Straw ..	1178		..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	36 52	54¾	3 6	7 18 5	1 14 9		0 8 11	..
				Tail Corn	2 44	..	..					
				Straw ..	1686		..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	41 22½	54½	3 4½	8 13 7	2 9 11	..	1 9 8	..
	Mineral Superphos. ..	2		Tail Corn	3 25	..	..					
				Straw ..	1926	..	..					
N	No Manure	..	..	Head Corn	30 18	54¼	3 4½	6 4 9	..	..	..	..
				Tail Corn	2 34	..	..					
				Straw ..	1216	..	..					

Average of Plots K and N :—*6l.* 3*s.* 8*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 10,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Australian, 3½ bushels, sown March 29th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 29th, worked in with the seed. Sulphate Ammonia, May 2nd, rolled in. Nitrate Soda, May 2nd, left on surface.

First Rains after Application of Manures.—May 9th, very little.

Previous Cultivation.—Old Sainfoin raftered in 1883, and so left until the Winter of 1884. 1885, Turnips (2 cwt. Mineral Superphosphate). 1886, Wheat.

Soil.—Light chalk on chalk.

Mr. Gray states that in the month of May the Plots were attacked by Wireworm, the unmanured Plots suffering most.

GROUP II.

No. 11.—AFTER BARLEY.—Mr. R. HEWETT'S EXPERIMENTS, Hampshire, near Stockbridge.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s d.	£ s. d.	£ s d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	21 48 1 11 895	52½	2 7½	3 12 5	0 17 9	..	..	0 9 1
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	24 5 41 1028	53¼	2 9¾ ..	4 3 2	1 8 6	..	0 3 11	..
K	No Manure	..	..	Head Corn Tail Corn Straw ..	18 27 40 909	51½	2 4½	2 17 9	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	19 42 1 0 1135	51¾	2 7½	3 9 7	0 14 11	..	..	0 10 11
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	18 4 1 0 947	51¼	2 7½	3 2 6	0 7 10	..	..	0 12 5
N	No Manure	..	..	Head Corn Tail Corn Straw	15 13 37 760	51½	2 7½	2 11 8	..	..	..	..

Average of Plots K and N:—2*l.* 14*s.* 8*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 11,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Page's Prolific, 3½ bushels, sown March 30th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 26th, left on surface. Sulphate Ammonia and Nitrate Soda, May 9th, left on surface.

First Rains after Application of Manures.—April 1st and May 18th.

Previous Cultivation.—1880 to 1885, Sainfoin, mown for Hay, the aftermath fed and penned with sheep. 1886, Barley.

Soil.—Light chalk on chalk.

Mr. Hewett says that this land was poor and out of condition, and was selected to see what effect top-dressings would have in such a case, and that the soil being very light and thin, the drought affected it very severely. He also states that all the Plots were damaged by Wireworm, but about equally, but that M and N were slightly injured by rabbits.

GROUP II.

No. 14.—AFTER WHEAT.—Mr. W. H. MAGOR'S EXPERIMENTS, Cornwall, near Grampound Road.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda .. Mineral Superphos. Muriate of Potash	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	53 0 2 12 2597	55	2 9	9 5 9	1 17 10	..	0 11 0	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	51 20 2 28 2531		2 9	9 1 1	1 13 2	..	0 8 7	..
K	No Manure	.	..	Head Corn Tail Corn Straw ..	40 28 3 0 1935	..	2 9	7 4 5	..	..	..	
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	48 26 1 8 2367	.. .. ..	2 9	8 7 9	0 19 10	..	..	0 6 0
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	45 0 1 44 2347	.. .. ..	2 9	7 19 4	0 11 5	..	..	0 8 10
N	No Manure		..	Head Corn Tail Corn Straw ..	42 4 2 4 2298	.. .. ..	2 9 . ..	7 11 5	..	..	..	..

Average of Plots K and N :—7*l*. 7*s*. 11*d*.

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 14,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—2½ bushels, sown March 31st, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 5th, worked in. Sulphate Ammonia and Nitrate Soda, April 26th.

First Rains after Application of Manures.—April 25th, and May 2nd and 6th, light showers; 3rd week in July was showery.

Previous Cultivation.—1880, Clover, mown for Hay (no manure). 1881, Grass (2½ cwt. guano). 1882, Grass (guano and grass manure). 1883, Grass (mixed dressing). 1884, Grass (no manure). 1885, Grass, mown for Hay (1 cwt. Nitrate, 1 cwt. Guano). 1886, Wheat (no manure).

Soil.—Light, on Clay Slate.

Mr. Magor says that, at the time of cutting, Plot H was riper than the others, and K and N were greener than any of the rest.

GROUP II.

No. 15.—AFTER WHEAT.—Mr. N. STOREY-MASKELYNE'S EXPERIMENTS, Wiltshire, near Swindon.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw, and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	43 28	57	3 0	9 1 0	2 9 6	..	1 2 8	..
	Mineral Superphos.	2		Tail Corn	5 23	..	..					
	Muriate of Potash	¾		Straw ..	2816	..	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	42 42	57	3 0	8 16 2	2 4 8	..	1 0 1	..
	Mineral Superphos. ..	2		Tail Corn	4 46	..						
	Muriate of Potash	¾		Straw ..	2732	..	..					
K	No Manure	..	..	Head Corn	34 28	55	2 10½	6 14 4	..	..	..	..
				Tail Corn	3 25	..	..					
				Straw ..	2016	..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	40 28	56	3 0	8 4 1	1 12 7	..	0 6 9	..
				Tail Corn	4 2		..					
				Straw	2470	.	..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	36 49	56	2 10½	7 4 0	0 12 6	..	.	0 7 9
	Mineral Superphos. ..	2		Tail Corn	3 19	..	..					
				Straw	2245	..	..					
N	No Manure	..	..	Head Corn	34 7	54	2 9	6 8 8	..	..	..	..
				Tail Corn	3 19	..						
				Straw ..	2008	..	..					

Average of Plots K and N :— 6*l.* 11s. 6*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 15,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—3½ bushels, sown April 13th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 13th, well harrowed in. Sulphate Ammonia and Nitrate Soda, May 19th, rolled in.

First Rains after Application of Manures.—April 30th, light showers; May 21st, heavy rain.

Previous Cultivation.—1882, Wheat. 1883, Oats. 1884, Clover, mown once, then fed off. 1885, Clover (top-dressing of cart manure in Spring), once mown and afterwards fed; manured in Autumn before ploughing; ploughed twice. 1886, Wheat, good crop.

Soil.—Marly loam, on Chalk Marl, fairly dry.

Mr. Storey-Maskelyne remarks that the absence of rain was much against the early development of the plant, but the soil is a good one for holding out in a dry season, from the aluminous ingredients in the marl which forms the subsoil.

GROUP II.

No. 16.—AFTER WHEAT.—Mr. J. STEWART HODGSON'S EXPERIMENTS, Surrey, Haslemere.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.				Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
							Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus.	lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s d.	£ s d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	24	50	55½	3 1½	6 5 2	1 8 6	..	0 1 8	.
	Mineral Superphos. ..	2		Tail Corn	6	40	..	..					
	Muriate of Potash ..	¾		Straw .		2348	..	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	26	0	57	3 3	6 8 9	1 12 1	..	0 7 6	
	Mineral Superphos. ..	2		Tail Corn	7	0	..	..					
	Muriate of Potash ..	¾		Straw		2066	..	..					
K	No Manure	..	..	Head Corn	16	0	56½	3 1½	4 8 11	..	..	..	
				Tail Corn	8	40		..					
				Straw ..		1368		..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	20	24	56	3 1½	5 7 8	0 11 0	..	..	0 14 10
				Tail Corn	7	0		..					
				Straw		2032		..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	27	14½	55½	3 1½	6 18 9	2 2 1	..	1 1 10	..
	Mineral Superphos. ..	2		Tail Corn	8	28							
				Straw ..		2494		..					
N	No Manure	..	..	Head Corn	20	0	56½	3 3	5 4 6	..	..	..	
				Tail Corn	8	2		..					
				Straw ..		1528	..	..					

Average of Plots K and N:—4*l.* 16*s.* 8*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 16,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—2 bushels, 1 peck, sown April 7th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 6th, harrowed in. Sulphate Ammonia and Nitrate Soda, May 2nd, left on the surface.

First Rains after Application of Manures.—April 22nd and May 5th.

Previous Cultivation.—1883, Turnips (farmyard-manure), fed-off by sheep. 1884, Oats. 1885, Trifolium, fed off with sheep. 1886, Wheat (farmyard-manure).

Soil.—Gravel, on Clay and Gravel.

Mr. Ashcroft, who inspected these plots in the third week in July, stated that about half of all the Plots had been dunged for the preceding wheat crop, and that the effect of the dung was much more apparent on the top-dressed Plots than on the "nothing" Plots K and N.

GROUP II.

No. 17.—AFTER WHEAT.—Mr. H. RICHARD'S EXPERIMENTS, Wiltshire, Charlton, near Shaftesbury.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s d.		bus. lbs.	lbs.	s. d.	£ s d.	£ s. d.	£ s. d.	£ s d.	£ s d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	51 0	55	3 7½	11 6 10	3 19 10	..	2 13 0	..
	Mineral Superphos. ..	2		Tail Corn	1 25	..	..					
	Muriate of Potash .	¾		Straw ..	2884		..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	46 27	55	3 6	9 16 7	2 9 7	..	1 5 0	..
	Mineral Superphos. ..	3		Tail Corn	1 0	..	..					
	Muriate of Potash ..	¾		Straw ..	2352		..					
K	No Manure		..	Head Corn	38 0	56	3 6	7 19 4	..	..	..	..
				Tail Corn	1 0	..	..					
				Straw	1792	..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	46 0	55¼	3 4½	9 6 10	1 19 10	..	0 14 0	..
				Tail Corn	1 0	..	..					
				Straw ..	2184	..	..					
M	Nitrate of Soda . ..	1¼	1 0 3	Head Corn	48 0	54¾	3 4½	9 16 0	2 9 0	..	1 8 9	..
	Mineral Superphos. ..	2		Tail Corn	1 14	..	..					
				Straw	2324	..	..					
N	No Manure	..	..	Head Corn	34 27	54	3 3	6 14 9	..	..	..	..
				Tail Corn	0 39	..	..					
				Straw ..	1568	..	..					

Average of Plots K and N:—*7l. 7s. 0d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 17,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—3 bushels, sown April 1st, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 1st, harrowed in behind the drill. Sulphate Ammonia and Nitrate Soda, April 22nd, harrowed with light seed-harrows.

First Rains after Application of Manures.—A good rain on April 23rd.

Previous Cultivation.—1881, Barley. 1882, Clover and Rye, cut and fed. 1883, Oats. 1884, Swedes, fed by sheep. 1885, Green Crop, fed off by sheep. 1886, Wheat.

Soil.—Sandy, on Green Sandstone, rather wet.

Mr. Richards says that the produce of the remainder of the field quite confirmed the disparity of yield between the manured and unmanured Plots; that the rapid growth made at an early period by the manured Plots was especially advantageous to them in this dry season.

GROUP II.

No. 18.—AFTER WHEAT.—Mr. A. C. SKINNER'S EXPERIMENTS, West Somerset, near Taunton.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity. per Acre.	Cost of Manure	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d		bus. lbs.	lbs.	s. d.	£ s d.	£ s d.	£ s. d.	£ s. d.	£ s d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw	46 0 4 10 2694	57·3 ..	4 3	12 1 5	2 19 0	..	1 12 2	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	43 0 3 28 2468	57·5 ..	4 3 .	11 4 0	2 1 7	..	0 17 0	..
K	No Manure		..	Head Corn Tail Corn Straw ..	41 0 4 28 2018	56·5 ..	4 0¾	10 4 3	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw	42 0 4 0 2242	57 ..	3 10½	10 2 3	0 19 10	..	..	0 6 0
M	Nitrate of Soda .. .. Mineral Superphos.	1¼ 2	1 0 3	Head Corn Tail Corn Straw	46 28 4 18 2660	57·2 ..	4 2¼	12 0 6	2 18 1	..	1 17 10	..
N	No Manure	..	..	Head Corn Tail Corn Straw ..	32 0 4 8 1702	56·25	4 0	8 0 7	..	..	..	..

Average of Plots K and N :—9*l.* 2*s.* 5*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 18,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Hallett's Pedigree Chevalier, 2 bushels, sown February 16th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 2nd, lightly harrowed. Sulphate Ammonia and Nitrate Soda, April 19th, lightly harrowed.

First Rains after Application of Manures.—Slight rain on the 11th of March, and a good fall of snow on 14th and 15th of March; 21st to 26th of April showery.

Previous Cultivation.—1882, Barley. 1883, Swedes and Turnips (6 cwt. dissolved bones), fed on the land by sheep, with a moderate allowance of cake. 1884, Barley (no manure). 1885, Seeds, Red and White Clover, 20 loads of rich farmyard-manure after crop of seed was taken. 1886, Wheat.

Soil.—Freeworking. Red Sandstone.

Mr. A. C. Skinner considers that the Guano and Superphosphate should have been well dragged in at the time the Barley was sown, if not before; but the experiments on his farm had not then been arranged. That all the manured Plots showed great luxuriance after the rains at the end of April, and would probably have been laid and too heavy, had it been a stormy season.

GROUP II.

No. 18d.—AFTER WHEAT.—Mr. A. C. SKINNER'S EXPERIMENTS, West Somerset, near Taunton.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	44 0	56·8	4 0	10 15 11	1 12 3	..	0 5 5	..
	Mineral Superphos.	2		Tail Corn	4 30	..	..					
	Muriate of Potash	¾		Straw ..	2180	..	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	46 0	56·5	4 0	11 9 5	2 5 9	..	1 1 2	..
	Mineral Superphos.	2		Tail Corn	5 36	..	..					
	Muriate of Potash ..	¾		Straw ..	2400	..	..					
K	No Manure ..	..	..	Head Corn	35 28	55·44	3 10½	8 11 7	..	..	..	..
				Tail Corn	4 30	..	..					
				Straw ..	1734	..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	44 0	56·8	4 0	10 18 4	1 14 8	..	0 8 10	..
				Tail Corn	4 0	..	..					
				Straw ..	2454	..	..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	47 0	56·4	3 11¼	11 8 4	2 4 8	..	1 4 5	..
	Mineral Superphos. ..	2		Tail Corn	4 14	..	..					
				Straw ..	2484	..	.					
N	No Manure ..			Head Corn	39 0	56·3	4 1½	9 15 10	..	..	..	..
				Tail Corn	4 0	..	..					
				Straw ..	1906	..	..					

Average of Plots K and N :—9*l.* 3*s.* 8*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 18D,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Hallett's Pedigree Chevalier, 2 bushels, sown February 16th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 2nd, lightly harrowed. Sulphate Ammonia and Nitrate Soda, April 19th, lightly harrowed.

First Rains after Application of Manures.—Slight rain on March 11th; a fall of snow on 14th and 15th of March; 21st to 26th of April; showery.

Previous Cultivation.—1882, Barley. 1883, Swedes and Turnips (6 cwt. of dissolved bones), fed on the land by sheep, with a moderate allowance of cake. 1884, Barley (no manure). 1885, Seeds, Red and White Clover, 20 loads of rich farmyard-manure after crop of seed was taken. 1886, Wheat.

Soil.—Freeworking, Red Sandstone.

These were duplicate Plots adjoining those of No. 18, Mr. A. C. Skinner having kindly carried out a double set of Experiments. Although the results are somewhat different, the previous treatment, as well as the after-management, was the same in both cases.

No. 19.—AFTER PEAS.—Major SPARKS'S EXPERIMENTS, Dorsetshire, near Weymouth.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s d		bus. lbs.	lbs.	s. d.	£ s d.	£ s. d.	£ s d.	£ s. d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	34 27	57½	3 7½	8 9 6	0 11 8	..	..	0 15 2
	Mineral Superphos.	2		Tail Corn	5 5		..					
	Muriate of Potash ..	¾		Straw ..	2428							
I	Sulphate of Ammonia	1	1 4 7	Head Corn	42 7	57½	3 1½	9 5 11	1 8 1	..	0 3 6	..
	Mineral Superphos. ..	2		Tail Corn	5 0		..					
	Muriate of Potash	¾		Straw ..	3166	.	..					
K	No Manure ..		..	Head Corn	36 46	56½	3 4½	9 2 6	..	..	..	..
				Tail Corn	8 21		..					
				Straw ..	2876		..					
L	Peruvian Guano	3	1 5 10	Head Corn	33 3	57	3 10½	8 12 11	0 15 1	..	..	0 10 9
				Tail Corn	6 0	..	..					
				Straw ..	2287	..	..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	31 1¾	56¼	3 6	7 11 10	..	0 6 0	..	1 6 3
	Mineral Superphos. ..	2		Tail Corn	5 31	..	..					
				Straw ..	2246	..	..					
N	No Manure ..		..	Head Corn	30 34	55	3 0	6 13 2	..	..	..	
				Tail Corn	5 7	..	..					
				Straw ..	2183	..	..					

Average of Plots K and N :—7*l.* 17*s.* 10*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 19,

Contained in Returns to Enquiries of Experimental Committee.

Prepared by the Chairman.

Seed Barley.—Hallett's Pedigree Barley, 4 bushels, sown March 21st, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 21st, harrowed in. Sulphate Ammonia and Nitrate Soda, April 22nd, left on surface.

First Rains after Application of Manures.—March 21st, and showery for some days; hardly any rain in April, but some good showers in May.

Previous Cultivation.—1882, Mangold. 1883, Swedes, fed off by sheep. 1884, Barley. 1885, Grasses. 1886, Peas.

Soil.—Limestone, clay subsoil.

These Plots were visited by the Chairman on July 28th, who found that, from the drought affecting some parts of the field more than others, the crops were ripening unevenly—and also that Plot H had been rather damaged by rabbits.

No. 21.—AFTER WHEAT.—Mr. W. H. IREMONGER'S EXPERIMENTS, Hampshire, near Andover.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s d.	£ s d.	£ s. d.
H	Nitrate of Soda .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	31 40¾ 1 39 1568	54¼	3 0	6 0 3	1 17 7	..	0 10 9	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	29 27¼ 1 33 1588	54½	3 0	5 13 6	1 10 10	..	0 6 3	..
K	No Manure	..	..	Head Corn Tail Corn Straw ..	20 27½ 1 7 1084	55	3 1½	4 1 3	..	.	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	29 27¼ 1 33 1456	54½	3 0	5 11 9	1 9 1	..	0 3 3	..
M	Nitrate of Soda .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	28 26¾ 1 30 1400	53½	2 10½	5 4 3	1 1 7	..	0 1 4	..
L	No Manure	..	..	Head Corn Tail Corn Straw ..	23 0 1 16 1120	53¾ .. .	2 10½	4 4 2	..	..	..	..

Average of Plots K and N :—4*l.* 2*s.* 8*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 21,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Hallett's Pedigree Barley, 3 bushels, sown April 7th and 8th, 1887.

Application of Manures.—Mineral Superphosphate and Potash, April 18th, worked in, and Guano, April 23rd, rolled in. Sulphate Ammonia and Nitrate Soda, April 23rd, rolled in.

First Rains after Application of Manures.—April 23rd; cold rain on April 25th, 26th, and 27th; growing showers on May 2nd, 3rd, and 5th.

Previous Cultivation.—1882, Rye, harvested. 1883, Vetches, fed. 1884, Roots, fed. 1885, Roots, fed. 1886, Wheat.

Soil.—Light and dry, gravel and chalk.

Mr. Studdy remarks that with a shallow top soil and a gravel subsoil, the whole of the Plots "burnt;" but comparing the manured experimental Plots with the remainder of the field, the manured Plots showed to advantage.

GROUP II.

No. 22.—AFTER BARLEY.—Mr. MARTIN J. SUTTON'S EXPERIMENTS, Caversham, near Reading.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	19 44	58½	3 6	5 2 5	1 19 1	..	0 12 3	..
	Mineral Superphos. ..	2		Tail Corn	6 30	..	..					
	Muriate of Potash ..	¾		Straw	1333	..	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	19 15	57	3 1½	4 13 0	1 9 8	..	0 5 1	..
	Mineral Superphos. ..	2		Tail Corn	6 36	..	..					
	Muriate of Potash ..	¾		Straw ..	1276	..	..					
K	No Manure	..	..	Head Corn	12 18	56¼	3 4½	3 6 2	..	..	..	..
				Tail Corn	5 35	..	..					
				Straw ..	845	..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	15 51	56¾	3 3	4 8 7	1 5 3	..	..	0 0 7
				Tail Corn	7 24	..	..					
				Straw ..	1449	..	..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	15 28	56	3 2¼	4 6 5	1 3 1	..	0 2 10	..
	Mineral Superphos.	2		Tail Corn	7 28	..	..					
				Straw ..	1437	..	.					
N	No Manure	..	..	Head Corn	11 24	56½	3 3	3 0 7	..	..	..	..
				Tail Corn	5 30	..	..					
				Straw ..	768	..	..					

Average of Plots K and N :—3*l*. 3*s*. 4*d*.

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 22,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—3 bushels, sown March 31st, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 31st, harrowed in. Sulphate Ammonia and Nitrate Soda, April 22nd, rolled in.

First Rains after Application of Manures.—March 31st and April 23rd.

Previous Cultivation.—1882, Mangold, drawn off. 1883, Wheat (dunged). 1884, Oats (no manure). 1885, Mangold and Cabbage drawn off (farmyard-manure, Guano, and Superphosphate). 1886, Barley (no manure).

Soil.—Light and dry, gravel on chalk.

Mr. Redman says that the great drought has materially reduced the yield; that there was rain on June 2nd, after which very scorching weather set in, and continued till after harvest; that the Guano Plot L took the lead till the middle of May, when it was overtaken by Plots H, I, and M; and that the unmanured Plots ripened rather later than the others.

GROUP II.

No. 24b.—AFTER WHEAT.—Mr. RICHARD BENYON'S EXPERIMENTS, Berkshire, near Reading.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw	41 19½ 8 11 2510	56½	3 9	10 8 1	2 0 6	..	0 13 8	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	43 22 8 4 2246	56	3 10½ ..	10 17 4	2 9 9	..	1 5 2	..
K	No Manure	..	.	Head Corn Tail Corn Straw ..	34 30 4 41 1018	56	3 10½	7 18 8	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	37 40 8 8 1632	56	4 0	9 12 0	1 4 5	..	..	0 1 5
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	42 13 8 27 2399	55	3 10½ .. .	10 15 11	2 8 4	..	1 8 1	..
N	No Manure	..	..	Head Corn Tail Corn Straw ..	34 54 5 6 1848	55½	4 0	8 16 7	..	..	..	..

Average of Plots K and N :—*8l. 7s. 7d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 24B,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Chevalier, 2 bushels, sown March 8th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 21st, 1887, harrowed lightly. Sulphate Ammonia and Nitrate Soda, May 7th, 1887.

First Rains after Application of Manures.—23rd, 24th, and 25th April.

Previous Cultivation.—1882, Wheat (dunged). 1883, Mangold (dung and 3 cwt. artificial manure). 1884, Barley. 1885, Clover (dunged), mown once for Hay—a good crop—then fed and folded by sheep with cake. 1886, Wheat.

Soil.—Medium, sandy loam on gravel.

Owing to delay at the station, the manures were not applied till late. No marked difference appears to have arisen from this late application. Mr. Todd says that the Guano Plot L showed better colour and growth when coming into ear than any of the other Plots.

GROUP II.

No. 26.—AFTER WHEAT.—Mr. MARK WALLIS'S EXPERIMENTS, Wilts, Salisbury Plain South.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s d.
H	Nitrate of Soda .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	21 21 1 1 1689	56	4 2¼	5 14 6	..	0 2 9		1 9 7
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	22 27½ 37 1683	55	4 3¾	6 1 1	0 3 10	..		1 0 9
K	No Manure . .	..	.	Head Corn Tail Corn Straw ..	22 0 22 1247	55½	4 2¼	5 9 8	..	.	..	..
L	Peruvian Guano	3	1 5 10	Head Corn Tail Corn Straw ..	30 28 38 1988	56	4 2¼	7 15 10	1 18 7	..	0 12 9	..
M	Nitrate of Soda .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	33 0 1 6 2267	55	4 3¾	8 15 3	2 18 0	..	1 17 9	..
N	No Manure	..	..	Head Corn Tail Corn Straw ..	25 0 17 1457	56	4 2¼	6 4 11	..	..	..	..

Average of Plots K and N :— *5l. 17s. 3d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 26,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Oakshott's Peerless White, 3 bushels, sown March 1st, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 2nd, worked in. Sulphate Ammonia and Nitrate Soda, April 19th, left on surface.

First Rains after Application of Manures.—April 23rd.

Previous Cultivation.—1884, Green Crop. 1885, Turnips (farmyard-manure). 1886, Wheat.

Soil.—Flinty soil on chalk.

Mr. Mark Wallis remarks that this land was in very poor condition and infested with Wireworm, especially Plots H, I, and K; that Plot M looked the best all through, and Plot L the next best.

GROUP II.

No. 28.—AFTER WHEAT.—LORD WANTAGE'S EXPERIMENTS, Berkshire, near Wantage.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	51 19¼ 3 24 4056	56¾	4 9	15 6 3	1 16 4	..	0 9 6	..
1	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	51 36¼ 3 42 3820	57¼	5 0	15 18 1	2 8 2	..	1 3 7	..
K	No Manure	..	..	Head Corn Tail Corn Straw ..	42 45½ 3 10 3360	57¼	4 10½	13 1 1	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	49 36¾ 3 10 4116	57¼	5 0	15 10 9	2 0 10	..	0 15 0	..
M	Nitrate of Soda .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	53 21¾ 3 20 3596	56¾	4 9	15 9 8	1 19 9	..	0 19 6	..
N	No Manure	..	..	Head Corn Tail Corn Straw ..	47 29½ 3 12 3396	57½	4 9	13 18 9	..	..	..	..

Average of Plots K and N:—13*l.* 9*s.* 11*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 28,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Hallett's Pedigree, 2½ bushels, March 2nd, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 21st, worked in with hoe by hand. Sulphate Ammonia and Nitrate Soda, April 21st, worked in with hoe by hand.

First Rains after Application of Manures.—June 2nd, 3rd, and 4th. This was the only rain from planting to carting.

Previous Cultivation.—1882, Barley. 1883, Turnips, fed off by sheep after Rye Grass, also fed off by sheep. 1884, Wheat. 1885, Beans (dunged), fed off by sheep through being blighted. 1886, Wheat.

Soil.—Good loam upon chalky rock, and Greensand.

It will be observed that these Manures were not applied till nearly seven weeks after the Barley was sown. Mr. Eady remarks that Plot L was, on coming into ear, far superior to any of the others, H being next. He says, "the season suited our district; had it been a showery one, this Barley would have been lodged and spoiled." The high prices attached to these samples should also be noticed, the Judges being much pleased with their high quality.

GROUP III.

No. 4.—AFTER MIXED RAPE AND TURNIPS (FED OFF).—Mr. W. V. BONNOR'S EXPERIMENTS, HEREFORDSHIRE, NEAR ROSS.

RESULTS, CALCULATED PER ACRE.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.				Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
							Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus.	lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	31	28	56	2 10½	6 12 3	..	0 8 9	.	1 15 7
	Mineral Superphos. ..	2		Tail Corn	4	24	..	..					
	Muriate of Potash ..	¾		Straw ..	2331		..	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	38	46	57	3 0	8 5 0	1 4 0	..	.	0 0 7
	Mineral Superphos. ..	2		Tail Corn	5	10	..	..					
	Muriate of Potash	¾		Straw ..	2711		..	..					
K	No Manure	..	..	Head Corn	33	23	57	3 3	7 7 2		..	..	..
				Tail Corn	4	8	..						
				Straw ..	2158		..	..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	37	19	57	3 4½	8 14 3	1 13 3	..	0 7 5	..
				Tail Corn	4	46	..	..					
				Straw	2756		..	..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	36	40	58	3 3	8 6 10	1 5 10	..	0 5 7	..
	Mineral Superphos. ..	2		Tail Corn	5	49	..	.					
				Straw .	2514		..	.					
N	No Manure ..	..	..	Head Corn	31	25	57	3 3	6 14 10	..	..	..	..
				Tail Corn	2	32	..						
				Straw ..	1982		..						

Average of Plots K and N :—7*l.* 1*s.* 0*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 4,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Chevalier, 2½ bushels, sown April 5th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 5th, worked in with seed. Sulphate Ammonia and Nitrate Soda, May 3rd, rolled in.

First Rains after Application of Manures.—April 25th and 26th, heavy storms both days; May 2nd and 4th, stormy.

Previous Cultivation.—1882, Clover. 1883, Wheat. 1884, Turnips. 1885, Wheat. 1886, mixed Rape and Turnips, fed by sheep, but very poor crop.

Soil.—Freeworking. Red Sandstone.

No material difference in the manured Plots on coming into ear, but Mr. Bonnor reports that by a thunderstorm on the 15th of July, Plot H was more laid than the others. This probably accounts for the deficiency of yield in this Plot.

GROUP III.

No. 5.—AFTER POOR TURNIPS (FED OFF).—Mr. JOHN CLARKE'S EXPERIMENTS, West Somerset, Luccombe.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.		Weight per Bushel.	Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N. Increase.	Decrease.	Net Gain by use of Manure.	Net Loss by use of Manure.
		cwts.	£ s. d		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda	1¼	1 6 10	Head Corn	26 8	54	2 8¼	4 15 11	..	0 17 0	..	2 3 10
	Mineral Superphos. ..	2		Tail Corn	2 42	.	..					
	Muriate of Potash ..	¾		Straw	1426	..	..					
I	Sulphate of Ammonia	1	1 4 7	Head Corn	26 32	54	2 9	5 1 6	..	0 11 5		1 16 0
	Mineral Superphos. ..	2		Tail Corn	3 2	..	..					
	Muriate of Potash ..	¾		Straw ..	1574	..	..					
K	No Manure	..	..	Head Corn	32 28	53½	2 10½	6 6 5	..	..	..	..
				Tail Corn	4 8		..					
				Straw ..	1724		..					
L	Peruvian Guano ..	3	1 5 10	Head Corn	29 8½	53½	2 10½	5 18 7	0 5 8	..	..	1 0 2
				Tail Corn	5 8		..					
				Straw ..	1678		..					
M	Nitrate of Soda	1¼	1 0 3	Head Corn	26 14	53½	2 9	5 5 1	..	0 7 10	..	1 8 1
	Mineral Superphos. ..	2		Tail Corn	5 6	..	..					
				Straw ..	1554		..					
N	No Manure	..	..	Head Corn	25 12½	53½	2 10½	4 19 6	..	..		..
				Tail Corn	3 48	..	..					
				Straw ..	1330	..	..					

Average of Plots K and N :—5*l*. 12*s*. 11*d*.

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 5,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Webb's Kinver Chevalier, 2½ bushels, sown April 14th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 14th, left on surface, not worked in. Sulphate Ammonia, April 25th, and Nitrate Soda, May 30th, not worked in.

First Rains after Application of Manures.—April 22nd, April 28th, May 31st.

Previous Cultivation.—1882, Turnips (dissolved Bones and Superphosphate). 1883, Barley. 1884, Mixed Grasses (fed off, no manure). 1885, Wheat. 1886, Vetches cut green and carried off, followed by Turnips (2 cwt. dissolved bones, 2 cwt. Superphosphate); very poor crop, fed off by sheep without corn or cake.

Soil.—Light and dry. Stone rush on gravel. New Red Sandstone (edge of Devonian).

Mr. Clarke remarks on the lateness of the season, and the Barley being very backward up to May 31st; after that date the continuance of drought caused a failure of the crops, the straw being very short, and the corn ripening very irregularly.

GROUP III.

No. 23.—AFTER VARIOUS CROPS.—Mr. W. TILL'S EXPERIMENTS, Gloucestershire, Thornbury.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s d.
H	Nitrate of Soda .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	37 16 2 31 2464	56½	3 7½	8 14 2	0 10 11	..	..	0 15 11
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	37 21 2 19 2129	56	3 6	8 4 10	0 1 7	..	..	1 3 0
K	No Manure	..	..	Head Corn Tail Corn Straw ..	36 20 1 1 2016	56½	4 3 . ..	9 3 9	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw	37 16 1 27 2240	56	3 7½	8 8 8	0 5 5	..	..	1 0 5
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	35 36 3 0 2077	55½	3 3¾	7 13 0		0 10 3	..	1 10 6
N	No Manure	..	..	Head Corn Tail Corn Straw ..	30 8 1 0 1484	56½	4 0	7 2 9	..	..	..	..

Average of Plots K and N :—*8l. 3s. 3d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 23.

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Chevalier, 3 bushels, 1½ pecks, H, and I, on March 12th, 1887; the other Plots a week later, sowing interrupted by snow.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, March 29th, harrowed in. Sulphate Ammonia and Nitrate Soda, April 20th, rolled in.

First Rains after Application of Manures.—March 30th, end of April.

Previous Cultivation.—1881, Potatoes, Mangold, and Turnips. 1882, Part Barley, part Green Crops. 1883, Clover (farmyard-manure). 1884, Wheat. 1885, Swedes (artificial manure), fed off by sheep with cake. 1886, Part Oats, part Potatoes, and part Mangold.

Soil.—Deep loam on gravel.

This is a very interesting experiment, each Plot crossing three varieties of previous cultivation. The several conditions of each Plot on 26th July are described in Mr. John Bennett's report as follows (see sketch):—

H.	I.	K.	L.	M.	N.
	After Oats, 1886.				
13	14	15	16	17	18
After Mangolds, 1886.					
12	11	10	9	8	7
After Potatoes, 1886.					
1	2	3	4	5	6

No. 1.—Crop good, with ears not well out of sheath.

No. 2.—Crop good; little thicker than No. 1; ears better out of sheath.

No. 3.—Fair crop; straw much shorter and greener, with shorter ears than the two previous Plots.

No. 4.—Very similar to No. 1.

No. 5.—Thick crop; long in straw; not well out of sheath.

No. 6.—Similar to No. 3.

No. 7.—A little riper and better out of sheath than No. 6.

No. 8.—Good crop, and well out of sheath.

No. 9.—Crop good, with good ears well out.

No. 10.—Similar to No. 7.

No. 11.—Very good crop, well out, with good ears.

No. 12.—Strong crop, and best in general appearance of the Plots "after Mangolds."

No. 13.—Strong crop; very marked difference to Nos. 15 and 18.

No. 14.—Similar to No. 13.

No. 15.—Much greener than other Plots.

No. 16.—The best "after Oats," very similar to No. 12.

No. 17.—Similar to No. 13 and 14.

No. 18.—Much greener than manured Plots.

GROUP III.

No. 27.—AFTER SWEDES FED OFF, WITHOUT CORN OR CAKE.—Mr. JAMES SELLICK'S EXPERIMENTS, West Somerset, near Wiveliscombe.

Results, Calculated per Acre.

Plots.	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d		bus. lbs.	lbs.	s. d.	£ s d.	£ s d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw ..	30 42 1 44 1692	56	3 1½	6 3 0	0 13 1	..	..	0 13 9
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	29 11 1 17 1640	57	3 1½	5 16 5	0 6 6		..	0 18 1
K	No Manure	..	.	Head Corn Tail Corn Straw ..	28 16 1 37 1390	55	3 0 ..	5 7 4	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	29 46 1 8 1460	56	3 0	5 11 9	0 1 10	..	..	1 4 0
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	31 50 2 0 1720	56	3 0	6 3 6	0 13 7	..	..	0 6 8
N	No Manure	..	..	Head Corn Tail Corn Straw ..	28 24 2 0 1410	55	3 1½	5 12 6	..	..	..	.

Average of Plots K and N:—5*l.* 9*s.* 11*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 27,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Oakshott's Golden Melon, 2½ bushels, sown April 7th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, and Guano, April 18th, left on the surface. Sulphate Ammonia and Nitrate Soda, May 2nd, left on the surface.

First Rains after Application of Manures.—Showers, April 22nd to 26th; May 2nd.

Previous Cultivation.—1882, Turnips (3 cwt. Hill's Nitrophosphate). 1883, Barley. 1884, Grass. 1885, Wheat (¾ cwt. Nitrate Soda, 1 cwt. salt). 1886 Swedes (4 cwt. Hill's Nitrophosphate), fed off by sheep.

Soil.—Blue Rag (Shillet) on Slate.

This land suffered much and unevenly from the drought, in consequence of the slate rock being thinly covered with soil in various spots. Mr. Sellick remarks that Plot H had several of these thin spots; L, one large spot; and that M and N had a more level quality of soil.

GROUP III.

No. 29.—ON LEY.—Mr. KNOLLYS' EXPERIMENTS, West Somerset, near Milverton.

Results, Calculated per Acre.

	How Manured.	Quantity per Acre.	Cost of Manure.	Produce in Grain and Straw and Weights per Bushel.			Value per Bushel of Head Corn.	Total Value of Crop.	Increase or Decrease of Value as compared with Average of Plots K and N.		Net Gain by use of Manure.	Net Loss by use of Manure.
						Weight per Bushel.			Increase.	Decrease.		
		cwts.	£ s. d.		bus. lbs.	lbs.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H	Nitrate of Soda .. .. Mineral Superphos. .. Muriate of Potash ..	1¼ 2 ¾	1 6 10	Head Corn Tail Corn Straw	32 24 8 2 2132	60	3 10½	8 13 1	2 4 7	..	0 17 9	..
I	Sulphate of Ammonia Mineral Superphos. .. Muriate of Potash ..	1 2 ¾	1 4 7	Head Corn Tail Corn Straw ..	28 38 7 2 1916	60	3 10½	7 13 3	1 4 9	..	..	0 0 2
K	No Manure	..	.	Head Corn Tail Corn Straw .	23 46 6 0 1766	59¾	3 9	6 7 1	..	..	..	..
L	Peruvian Guano ..	3	1 5 10	Head Corn Tail Corn Straw ..	Not sown.	..	..	..	..	..		..
M	Nitrate of Soda .. .. Mineral Superphos. ..	1¼ 2	1 0 3	Head Corn Tail Corn Straw ..	31 28 7 2 2846	59¾	3 9	8 12 9	2 4 3	..	1 4 0	.
N	No Manure	..	..	Head Corn Tail Corn Straw ..	27 16 4 30 1776	57¾	3 6	6 9 11	..	..	..	..

Average of Plots K and N :—6*l.* 8*s.* 6*d.*

ABSTRACT OF PARTICULARS WITH REFERENCE TO EXPERIMENT No. 29,

Contained in Returns to Enquiries of Experimental Committee.

PREPARED BY THE CHAIRMAN.

Seed Barley.—Webb's New Golden Grain, $2\frac{3}{4}$ bushels, sown Jan. 28th, 1887.

Application of Manures.—Mineral Superphosphate, Potash, February 5th, left on the surface. Sulphate Ammonia and Nitrate Soda, April 18th, rolled in same day.

First Rains after Application of Manures.—February 18th and 19th. April 22nd and 23rd.

Previous Cultivation.—1882, Clovers and Rye Grasses. 1883, Dredge Corn. 1884, Turnips (fed off by sheep with corn and cake). 1885, Wheat. 1886, Clover and Rye Grass, fed off, lightly dressed with dung in Autumn; Clovers died out in Winter.

Soil.—A dry shallow soil on Dolomitic Conglomerate.

In this Field, which is small, six Plots of similar character could not be obtained, and Plot L was therefore omitted.

The Barley having been sown very early, before the arrangement for supply of Manures had been made, Potash in the form of Kainit was used instead of Muriate of Potash, the value being about the same.

P.S.—Since this Report was written, the account of the Norfolk Experiments in 1887 has been published, and an extract is given from it in this Journal.

The effect of potash when combined with nitrogenous manures is still very marked upon Mr. Cooke's farm in the experiments in the "Old Sainfoin Field," though not so great as in previous years. But on the two other farms on which experiments were conducted, the addition of potash seems to have had but little effect.

Mr. Cooke explains that the striking results before obtained from the application of potash combined with nitrate of soda or other nitrogenous manure have been when barley has followed (as in this case of the old Sainfoin Field) a crop of white turnips, all drawn from the land, and grown with artificial manure containing no potash. He considers this crop to be more exhaustive of potash than a previous crop of barley, the condition of another of his experimental fields (Houghton Hill).

The Norfolk Experiments of 1887 have been extended to other subjects besides the growth of barley, and the whole Report is one of great interest and instruction, and should be in the hands of all who, like myself, are seeking information on these matters.

In our own system of experiments we have the great advantage of the replies of many voices to the questions submitted for elucidation, an advantage which is clearly manifested in this potash question, in which we might otherwise have inferred that larger benefits were likely to accrue to us from the use of potash in increasing our barley crop, than I fear is the case, though I hope we shall find its value in our clovers when we are able to take up experiments on clovers and grasses.

An analysis of the Flitcham soil shows it to be very deficient in potash, yet, as Dr. Voelcker remarks,* "this deficiency "is not so great as in itself to account for the astonishing results "recorded. . . . Had the experiments not been in this and in "previous years visited by many interested in them, the results "must have been received incredulously. The application or "omission of 2 cwt. muriate of potash per acre, has made a "difference of no less than 45 bushels per acre! In short, on this "land without potash, the barley crop is almost an entire failure. "Mr. Cooke remarks, that though 2 cwt. per acre of muriate of "potash was used, probably 1 cwt. would be sufficient." And Dr. Voelcker adds: "These experiments on chalky soil, and the "influence of potash on such soils, open up a new and most "interesting and valuable field of enquiry."

J. E. Knollys.

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* Journal of the R.A.S.E., vol. xxiii. Part I. p. 259.

The Bath and West of England Experiments of 1887. By Dr. J. AUGUSTUS VOELCKER, B.Sc., F.C.S., Consulting Chemist to the Society.

THIS year, as last, I have been asked to add to the Report of the Chairman of the Experimental Committee my own general comments upon the Experiments, and especially to touch upon any scientific points which have arisen in connection with them.

The Committee in framing their plan have, I think, done wisely in several points. By having comparatively few plots, and these of a practical size, they have confined the experiments to a few definite and important issues of not too complicated a character. The large range, comprising several different counties and districts, over which the experiments spread, further eliminates to a great extent those errors which would be due to any one experiment considered by itself, whilst the variety of soils upon which the manures have been tried enables more general conclusions to be drawn as to the average effect and value of each manure. The occurrence of duplicate unmanured plots has also been an advantage, as enabling one to judge of the evenness of character of the fields on which the crops were grown, and consequently their suitability as experimental fields. Further, as regards the manures used, these have been arranged with consideration both as to the relative cost and the principal manurial constituents which they are capable of supplying, so that whilst the expenditure on each has been approximately equal, the manurial elements supplied are fairly comparable as to quantity.

Two different views may be taken of the experiments—first, that adopted by Mr. Knollys, which considers them mainly in their financial bearing; and secondly, that which has regard to the respective acreage yields. I must acknowledge my preference for that which considers the yield of crop rather than an estimated financial result. The attempt has been made, by valuation of samples of the grain, to give a very practical turn to the experiments; but I fear the plan adopted will fail to meet the purpose, and that in many cases the actual money return will be found to differ widely from the estimated value as given in the Tables. Local circumstances, facilities or otherwise for the profitable disposal of straw, and for the sale or use of tail corn, are items which must militate greatly against success in attempting to place a series of experiments upon the same footing. In several cases a profitable money result is found on examination to be due rather to successful harvesting of the crop of a particular plot than to the actual yield of the plot as influenced by a particular manure. Further, variation of prices, changes in the cost of manures, &c., must alter the results if stated financially, and make them inapplicable for reference in future years; whereas if stated in respect to yield only, the results would allow of every one adapting them to local circumstances, with the ever-recurring changes of price. The experiments must therefore, I think, be considered on a broad basis only.

Adopting this view, the three main questions for solution have, I think, been:—

(1.) Has manuring on the whole been successful, and which manure has done best?

(2.) Has nitrogen done better in the form of sulphate of ammonia, nitrate of soda, or as contained in guano?

(3) Has potash as a manurial element been found to be advantageous? Is it better supplied as potash salts, or is it sufficiently contained in Peruvian guano?

The costs of the manures given in the Tables are approximately equal, with the exception of Plot M (no potash). An average analysis of the Peruvian guano used showed it to contain 6·91 per cent. of ammonia, 17·32 per cent. of phosphoric acid (equal to 37·81 per cent. of tribasic phosphate of lime), and 3·11 per cent. of potash (equal to 5·76 per cent. of sulphate of potash).

As regards the other manures, taking the averages of the samples analysed, the nitrate of soda was 97·27 per cent. pure; the sulphate of ammonia contained 24·61 per cent. of ammonia; and the superphosphate contained 32·26 per cent. of soluble phosphate.

The following Table shows, approximately, the amounts of ammonia, phosphate of lime, and potash, supplied on the different plots:—

	H.	I.	L.	M.
Ammonia, lbs. per acre	26·60	27·44	24·20	26·60
Phosphate of Lime, lbs. per acre ..	58·24	58·24	129·39	58·24
Potash (K_2O) „ „ ..	42·00	42·00	9·00	..

In arriving at my conclusions on the above questions, I have eliminated all those cases in which, from one cause or another, the experiments appear to me unreliable or of doubtful value. Taking first Mr. Knollys's Group I. (After Roots drawn from the Land), it must be noticed that in almost every case dung, with or without additional manures, had been applied to the previous Root crop. The results as regards the manures put on in 1887 are therefore rather doubtful. Still there has been an increase in each case; that obtained with sulphate of ammonia has not been sufficient to meet the cost, but between the other three kinds of manure there has been little to choose, the result being to some degree a profitable one. In the five cases under Group III., the result has on the whole been unfavourable to the use of manures, which is not surprising when it is borne in mind that, with but one exception, the previous crop was fed off by sheep. The least loss was naturally with the cheapest manure, viz. nitrate of soda mixed with superphosphate.

Group II. forms the most important series. In this all the instances of actual decrease of yield can be readily explained, and the general result, even in spite of a season very unfavourable to the action of the manures, is satisfactory. After eliminating all doubtful cases, the conclusion I come to in this group is, that the application of all the manures except guano has been remunerative; nitrate of soda and superphosphate, either with or without potash, paid best, the cost of the potash being just about met by the increased produce. Nitrate of soda, where used, has also produced more straw and done better than sulphate of ammonia.

The season has been an exceptionally unfavourable one for manures, and has doubtless in great measure accounted for the better results given by nitrate of soda as compared with sulphate of ammonia. Guano has been under a still greater disadvantage, and it would be unfair to draw any conclusion regarding it, from experiments conducted in such a season as the past alone. It is worthy of note that the different manures have had but small influence in determining the relative qualities of the grain, slightly the best price being realised in the case of guano.

Much interest is attached to the question as to the advantage of using potash manures. The results on the whole have not shown any such decided advantage as was exhibited in the Norfolk Experiments of 1886. Mr. Knollys has discussed this matter at considerable length in his report, and at his suggestion I analysed some of the soils in order to determine the amount of potash in them. These soils (dried at 212° F.) contained the following percentages of potash:—Hewett, ·39; Coles, ·29; Ashcroft, ·19; Wallis, ·14; Till, ·57; Gray, ·23; Sutton, ·17; Magor, ·45.

The potash in all these is higher than in Mr. Cooke's soil at Flitcham, which contained only ·10 per cent.; in some few cases, *e.g.* Mr. Sutton's, the small amount of potash present in the soil has been advantageously supplemented; but the general result, possibly from the larger amount of potash in the soils, was in no way of the striking nature instanced in Mr. Cooke's experiments.

The Practical Outcome of the Barley Experiments. By Sir T. D. Acland.

Mr. Knollys has undertaken a task this year, involving so much extraordinary trouble and expenditure of time, that it was very desirable that he should not be impeded by others in drawing up a report of his arduous work; especially as the whole scheme of experiments was originated by him.

On this ground, and also from fear of increasing the unavoidable delay in the publication of the 'Journal,' I have not repeated the attempt which I made last year to give fully my own view of the experiments, especially as the finally corrected tables have only come into my hand at the last moment.

I confess that I have from the beginning had doubts as to the expediency of basing the practical results of the experiments on the estimated valuation of profit and loss. My doubts are confirmed by the tables prepared with so much care. I have no doubt that the samples were valued by very competent judges, to whom the Society is equally indebted for the trouble they took. But in the case of my Devon farm the barley valued at from 3*s.* 4½*d.* to 3*s.* 9*d.*, was sold for 4*s.*; the barley on my Cornish farm, valued uniformly at 2*s.* 4½*d.*, sold for 3*s.* 6*d.* Mr. Knollys has pointed out in a note to his Report some reasons which may account for the difference.

I think therefore it may not be altogether useless if I so far continue the attempt I made last year to give the "practical outcome," as to show simply the increase of bushels on each plot marked +, and the rare cases where the result of manure, owing to some special cause, fell below the natural level, by the *minus* sign —; practical farmers knowing the increased quantities can judge of the pecuniary result with reference to the different circumstances of each district.

I will take the cases as nearly as possible in the order in which Mr. Knollys has arranged them:—

1. *Barley after Roots* drawn off.
2. *Barley after Wheat*, divided into 4 sections, according as the unmanured land yielded—
    40 bushels or more;
    30 ,, or more, less than 40;
    20 ,, or more, less than 30;
    ,, less than 20.
3. *Barley on Land in any other state requiring Manure.*

In counting bushels I have included the tail corn, and I have omitted straw, for the sake of simplifying the tables. I have also omitted fractions of bushels, giving the nearest whole number. Or, to speak more precisely, when the fraction was considerably below $\frac{3}{4}$ I have omitted it. When it was about that fraction I have counted it as a bushel.

Mr. Knollys, whose practical judgment so far exceeds mine, has drawn attention to the questions of which a solution was sought by the experiments, especially the efficacy of potash under different circumstances. I do not attempt to draw any scientific conclusions from particular cases, nor do I dwell on the teaching of averages.

GROUP I.—*After Roots drawn from the Land.*

No.	Name.	County.	Bushels on Unmanured Plot per Acre.	Increase or Decrease per Acre.				Remarks.
				Nitrate of Soda.	Sulphate of Ammonia.	Nitrate.	Guano.	
				Superphosphate.		Superphosphate.		
				Muriate of Potash.				
8C	Morrell	Oxon.	40	+ 7	+7	+5	+ 6	
13	Rolle	Mid Devon ..	29	+ 9	+9	+8	+ 9	
20	Acland	Mid Devon ..	*36	+10	+6	+6	+ 9	*Average of 3 plots, 34.
20D	Acland	Mid Devon ..	†31	+14	+7	+8	+ 9	†Only 1 plot, 31, the other eaten by rooks.
25	Acland	W. Cornwall	37	+ 4	+5	+4	+ 2	
	Average per acre		$34\frac{2}{5}$	+ $8\frac{4}{5}$	+$6\frac{4}{5}$	+$6\frac{1}{5}$	+ 7	

I may, however, point to one or two facts.

Land in high cultivation has responded to manure; observe 3 cases in Group I., and Mr. Knollys' note on No. 25 in that group.

Observe 6 cases out of 7 in Group II., Section 1; 5 cases out of 6 in Section 2.

I think also that examination of the previous cultivation in particular cases is instructive, notably No. 9, Mr. Gibbons.

But I venture to draw one broad conclusion, which I think justifies all the trouble which has been taken, namely, that the experiments show that it will be worth while to persevere in trying to find out how far crops of corn can be economically grown by the aid of manures, which are proved to have a practical effect, and that it is most important to secure the kind and zealous co-operation of practical farmers.

GROUP II.—*After Wheat or other Corn Crop.*

SECTION 1.—*Unmanured Produce,* 40 *Bushels or more.*

No.	Name.	County.	Bushels on Unmanured Plot per Acre.	Increase or Decrease per Acre.				Remarks.
				Nitrate of Soda.	Sulphate of Ammonia.	Nitrate.	Guano.	
				Superphosphate.		Superphosphate.		
				Muriate of Potash.				
				H.	**I.**	**M.**	**L.**	
3	Besent	Dorset	45	+ 9	+ 1	+ 2	+4	
7	Hampden	Sussex	40	+ 6	+ 1	+ 9	+7	
14	Magor	Cornwall ..	44	+11	+10	+ 3	+5	6 years' grass.
18	Skinner	Somerset ..	41	+ 9	+ 5	+ 9	+5	
18D	Skinner	Somerset ..	41	+ 7	+10	+10	+7	
19	Sparks	Dorset	40	− 1	+ 7	− 4	−1	Rabbits.
28	Wantage	Berks	48	+ 6	+ 6	+ 8	+4	
	Average per acre		$42\frac{5}{7}$	$+6\frac{5}{7}$	$+6\frac{4}{7}$	$+5\frac{2}{7}$	$+4\frac{3}{7}$	

SECTION 2.—*Unmanured Produce exceeding* 30 *Bushels and less than* 40.

1	Ashcroft	Kent	32	+ 3	=	+ 6	+ 5	
9	Gibbons	E. Somerset	36	+13	+15	+ 3	+11	Only on one ploughing.
10	Tom Gray	Wilts	34	+11	+ 6	+11	+ 5	
15	Storey-Maskelyne	Wilts	38	+11	+ 9	+ 2	+ 6	
17	Richards	Wilts	37	+15	+10	+12	+10	
24B	Benyon	Berks	39	+10	+11	+11	+ 6	
	Average per acre		36	$+10\frac{1}{2}$	$+8\frac{1}{2}$	$+7\frac{1}{2}$	$+8\frac{5}{6}$	

SECTION 3.—*Unmanured Produce,* 20 *Bushels and not exceeding* 30.

2	Bennett	Herefordshire	22	+ 6	+ 3	+ 3	+5	
6	Coles	Wilts	26	+ 6	+ 7	+ 6	+3	
8A	Morrell	Oxon	28	+ 7	+10	+12	+8	
8B	Morrell	Oxon	30	+ 9	+11	+12	+8	
16	Hodgson ..	Surrey	26	+ 5	+ 7	+ 9	+1	
21	Iremonger	Hants	23	+10	+ 8	+ 7	+8	
26	Wallis	Wilts	24	− 2	− 1	+10	+7	Wireworm.
	Average per acre		$25\frac{4}{7}$	$+5\frac{6}{7}$	$+6\frac{3}{7}$	$+8\frac{3}{7}$	$+5\frac{5}{7}$	

SECTION 4.—*Unmanured Produce below* 20 *Bushels.*

11	Hewett	Hants	17	+ 6	+ 7	+ 2	+ 3	
22	Sutton	Berks	17	+ 9	+ 9	+ 6	+ 6	

GROUP III.—*On Land not after Roots drawn off, nor after Wheat.*

No.	Name.	County.	Bushels on Unmanured Plot per Acre.	Increase or Decrease per Acre.				Remarks.
				Nitrate of Soda.	Sulphate of Ammonia.	Nitrate.	Guano.	
				Superphosphate.		Superphosphate.		
				Muriate of Potash.				
				H.	I.	M.	L.	
4	Bonnor	Herefordshire	36	=	+8	+6	+6	
5	J. Clarke	W. Somerset	33	−4	−4	−2	+1	Poor fed roots.
23	Till	Gloucestersh.	34	+5	+5	+4	+4	
27	Sellick	W. Somerset	30	+2	=	+2	=	Thin soil, suffered by drought unevenly.
29	Knollys	W. Somerset	31	+9	+4	+7	Not sown.	

In another short paper I have pointed to some other questions, such as the effect of folding with roots, and its cost, and the effect of manures on successive crops of corn.

If we put aside hypothetical questions based on estimated and of course temporary values, and if we do not attempt to form a scientific opinion as to the relative value of the selected manures on the various soils, we may fairly ask, Have the experiments been on the whole, taking a broad view, encouraging or discouraging?

Perhaps the following figures, which the eye can take in at a glance, may point to a practical answer.

In Mr. Knollys' 2nd group, "Barley after Wheat or other Corn Crop," there are 22 cases which he truly says are the most important of the series. How many of them produced more than 5 additional bushels per acre, with one or other of the manures? Five bushels with the increase of straw may be taken as about balancing the manures.

The cases of increase above 5 bushels (see tables, p. 84) may be collected thus.

	Plots.	Increase, Bushels, per acre.	Total.
H. Nitrate, phosphate, potash ..	17.	6, 6, 6, 6, 6, 7, 7, 9, 9, 9, 10, 10, 11, 11, 11, 13, 14	151
I. Ammonia, phosphate, potash ..	13.	6, 6, 7, 7, 7, 8, 9, 10, 10, 10, 10, 11, 11	112
M. Nitrate, and phosphate	16.	6, 6, 7, 8, 9, 9, 9, 10, 10, 15 ..	89
L. Guano	11.	6, 7, 7, 7, 8, 8, 8, 10, 11	72

In the columns H and I, there were 7 plots . } below 6 bus.
,, M and L, ,, 9 plots . } of increase.
In 5 of of these plots guano produced 5 bushels increase.

In all the Tables of this group there may be found about half-a-dozen plots in which there was no increase, or (owing to some accidental circumstance) even a minus quantity.

In the first group, Barley after Roots carted off, even on the plan of estimated profit and loss, the losses were comparatively few, one plot on Mr. Morrell's farm in Oxfordshire, four plots on my farm in Cornwall (on which a word presently). But if I may venture to say so, the figures, 12*s.* 0¼*d.*, 9*s.* 3½*d.*, 6*s.* 2*d.*, given as the average profit per acre, carefully worked out, as they certainly were, give, to say the least, a discouraging impression. Let us drop averages, and, as our Scotch friends say, condescend upon particulars.

There were 5 cases, the unmanured produce in every case but one (Mr. Rolle's 29 bushels), exceeded 30 bushels as the starting-point or datum line. The increase was as follows:—

GROUP I.—*Barley after Roots carted off* (*increased produce, bushels*).

H. Nitrate, phosphate, potash	4, 7, 9, 14, 10
I. Ammonia, phosphate, potash	5, 7, 9, 7, 6
M. Nitrate and phosphate	4, 5, 8, 8, 6
L. Guano	2, 6, 9, 9, 9

The lowest extra produce was on my farm in Cornwall (not reputed as good barley land), after mangold heavily manured; the unmanured plot for the experiments yielded 37 bushels. See Mr. Knollys' marginal note to Table No. 25 (p. 22).

It is perhaps needless to include the third group, in which there are cases presenting special peculiarities and causes for unsatisfactory results.

I cannot claim absolute accuracy for my figures, though I have taken much pains to guard against a calculation too favourable to the manures.

If any one cares to add up the total increase of bushels due to each manure, and to set the total price of the additional crop against the cost of each manure, the result, I think, will be encouraging, and perhaps not very unfavourable to the potash.

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SUMMARY OF CONTENTS.

REPORTS AND PAPERS.

PAGE

I.—Report of the Council to the Annual Meeting, Dorchester, 1887 .. 1

II.—Report on the Dorchester Meeting, 1887. By R. H. Rew .. 4

III.—Modern Pig Breeding. By Professor James Long 41

IV.—Insects Injurious to Apple and Pear Crops. By Charles Whitehead, F.L.S., F.G.S. 52

V.—The Agriculture of Pembrokeshire. By Joseph Darby 89

VI.—Suggested Reforms in Farm Practice. By J. Macdonald .. 110

VII.—Fruit Farming for Small Holdings. By W. Weldon Symington 126

VIII.—The Gramineous Herbage of Water Meadows. By Professor W. Fream, B.Sc. Lond., F.L.S., F.G.S. 129

IX.—Anthrax or Splenic Fever. By Professor G. T. Brown, C.B. .. 138

X.—Annual Report of the Proceedings of the Sussex Association for the Improvement of Agriculture. By Sir T. D. Acland .. 151

XI.—Report of the Experiments of the Norfolk Chamber of Agriculture, January, 1888 163

XII.—Barley Experiments. Report of the Experimental Committee. By J. E. Knollys, Chairman of the Committee 172

XIII.—The Bath and West of England Experiments of 1887. By Dr. J. Augustus Voelcker, B.Sc., F.C.S. 247

XIV.—The Practical Outcome of the Barley Experiments. By Sir T. D. Acland 250

XV.—Experiments on Corn Crops. Reported by Sir T. D. Acland and W. Stevens 255

XVI.—Grass Experiments at Killerton, Second and Third Year. By Sir T. D. Acland 262

THE NOTE-BOOK.

1. The Phenomena of Animal Life and Vegetation. By Sir H. Roscoe, 267. —2. The Wheat Crop of 1887. By Sir J. B. Lawes, Bart., F.R.S., 270.— 3. The Pig of the Future. By Sir J. B. Lawes, Bart., F.R.S., 275.— 4. Grass Experiments, by Martin J. Sutton, at Dyson's Wood, 277.— 5. Seeds for Permanent Pastures, 278.—6. Butter Making. By Colonel J. F. Curtis Hayward, 280.—7. Management of Farm Horses, 284.—8. Landowners and Village Water Supply, 285.—9. The Rainfall of 1887, 291.—10. Basic Slag. By Sir J. B. Lawes, Bart., F.R.S., 292.—11. The Hessian Fly. Abridged from the Report of the Commissioners, 295.—12. Agricultural Returns of Great Britain for 1887. Abridged from the Returns of the Agricultural Department of the Privy Council, 297.—13. Produce Statistics of Great Britain, 312.

THE FARMER'S LIBRARY.—Notes on New Books.

1.—Journal of the Royal Agricultural Society of England 316

2.—Elements of Botany. By the late Professor Asa Gray 327

3.—Transactions of the Surveyors' Institution 332

4.—Proceedings of the Agricultural Research Association for the North-Eastern Counties of Scotland. By Sir T. D. Acland 337

5.—Report of the Essex Agricultural Society 343

6, 7, 8.—Almanacks 345

9.—The Agricultural Depression. By P. McConnell 351

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